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TABLE OF CONTENTS ON LAST PAGE OF READING.***For a Strong Finish***

FOUR days of Liberty Loan opportunity remain. They should record a speeding up, a glorious climax of endeavor, sustained, accelerated, to the last minute, to the ultimate second. The bigger the oversubscription, the more stinging the rebuke to the pacifist and the traitor, the greater the dismay in Berlin.

PLOWING FOR THE LIBERTY LOAN.

THE editor of this journal recounts below his success in inducing a Californian to buy bonds in the Third Liberty Loan:

Although it was as a boy of thirteen when last I helped at plowing, and rode the horse instead of the plow handles, I accepted with confidence the challenge of the ranch owner to run a furrow.

Looping the reins about my neck, seizing the handles firmly and digging the steel point into the ground, I started the mules, with this result: X — X — X — (X represents holes two to three feet deep; — shows where the heel of the plow slid smoothly over the surface, point in the air). This was good, but I was after the continuous furrow which in time was accomplished.

It was straight, too—very often. Had not the noon whistle blown, my triumph would have been complete. With that, however, the animals, members of the California Mules' Union, started for home in second speed and I followed. The furrow through the alfalfa field was all that could be desired, but that across the macadamized highway and up the crushed stone drive to the barn was too ragged. With practice I could have made it both deeper and straighter. Even the rancher acknowledged that. And in appreciation he who had felt too poor to subscribe to any of the former Liberty Loans, took out \$4,000 worth then and there. Incidentally, he said he had not enjoyed himself so much in years. Referring to the subscription, not the plowing, I imagine.

CONTROLLING CRUDE RUBBER.

THERE are those who believe that were plantation rubber controlled and manipulated with discretion, the whole industry might be held in leading strings. When the business was smaller, so thought Baron Gondoriz and Charles R. Flint concerning wild rubber, and they thought wrongly. That these failures are remembered might be inferred from the fact that absolute corners are no longer seriously considered. Along the same road, however, lies the suggested project of curtailment and control of rubber plantation production. Not that American manufacturers fear either a shortage of rubber or higher prices long continued. The industry uses plantation rubber because it is plentiful and sold at reasonable prices. Let it become scarce and costly, other rubber and other materials will take its place. Guayule, Central American rubber and African sorts will loom large, and the great rubber reservoirs of Brazil, Peru and Bolivia will again be tapped to their utmost. It should not be forgotten, either, that thousands of tons of worn-out tires, inner tubes and rubber scrap, a stock greater than has ever before existed, will be reclaimed and used. Added to these may be cited the "organic fillers" that are beginning to find their place in general compounding, and the successful use of which seems to promise as much as did reclaimed rubber a few years ago. "Colloidal fillers"—plastics that amalgamate perfectly with crude rubber, that are cheap and lasting, have long been sought. That they are at hand is a fact. All that is needed to establish them firmly and on a large scale is a shortage in crude rubber or higher prices.

There is also the present-day rubber manufacturer to be considered. Twenty years ago he was almost wholly dependent upon importer or broker. He knew but little about the sources of crude rubber and cared less. Even to-day many of his class would prefer simply to make and sell rubber goods and rely upon a trusted middleman to furnish the raw material. The amazing growth of the business, the "rubber famine" that came about with the first great expansion of motor tire manufacture, however, forced him out of his seclusion. It was imperative that he personally investigate every possible source of supply. Hence it came about that pioneers, and sometimes heads of great companies, visited Para, Manaoas and Iquitos,

journeyed to Ceylon, the Malay States, and the Netherlands East Indies. This resulted in forward sales, in investment in going plantations, and even in rubber planting on a large scale. Thus any men, capitalists, or planters' associations, planning restricted output or higher prices, are dealing not with a helpless, uninformed body of manufacturers thousands of miles away, but with alert, enterprising business men who know every phase of the crude rubber situation; who have their own men in the planting and producing sections, and who, moreover, know reclaimed rubber, plastics, organic-fillers, and compounding from A to Izzard. In other words they are able to visualize the whole situation, while the crude rubber producers can see it only in part.

COTTON PRICE FIXING.

SOME years ago when crude rubber went close to three dollars a pound there ensued the "rubber craze" and a tremendous boom in rubber planting was the result. Had there been price control with a maximum, say, of one dollar a pound, thousands of acres now producing rubber would never have been planted.

To-day a similar condition exists in cotton and there exists a "cotton craze." Profits of 200 per cent have been secured by cotton planters, big and little, in the vast irrigated fields of the American Southwest. While there is a shortage, nothing will so swiftly correct it as these abnormal profits. Thus it is confidently predicted that the 40,000 acres planted in Arizona last year will expand to 125,000 acres this year. The planters certainly will not vote for price fixing, and if by any chance there should be overproduction, lower prices are sure to follow.

SOMEWHERE IN AMERICA.

AFTER the war is over this incident may be amplified by giving names and places; to-day only the barest outline is permissible. It is told because it points to the patriotic work of two rubber men and as an example for others.

Ostensibly they were on a vacation which was spent visiting one resort after another. From such centers they went on so-called fishing trips where they did very little fishing; on hunting trips where they did little shooting. They motored over roads hitherto untracked by rubber tires; they employed native guides to take them to places unknown to tourists, unmarked and unmapped.

A curious coincidence emphasized one of these vacation visits. A day or two after an apparently fruitless hunting trip the newspapers chronicled the fact that secret service men apprehended two Germans and destroyed their wireless outfit, its mast a huge dead tree.

In no way did the two vacationists appear in this work. They apparently observed, reported and departed. Going where they pleased, paying their own bills, keeping their own counsel, patriotic, persistent, hunters and fishers for Uncle Sam.

HOLLAND'S PITIFUL PLIGHT.

THAT our friends the Hollanders "are in Dutch" is a fact and a deplorable one. That because of food shortage they should join hands with Germany and become our enemies seems suicidal. They sold vast supplies of food to Germany, as they had a right to do, believing that we would supply more. Our duty lies, however, in supplying ourselves and our allies, which will tax our resources to the utmost.

If Holland joins the Central Powers, will Germany, with her own people starving, make good the Dutch food shortage? Have German promises so far been kept?

On the other hand, with Holland in the war against the Allies, how long would it be before the Allies would take over Java, Sumatra and Dutch Borneo?

Japan might or might not be the instrument of this taking over. Whatever naval and military force attempted it, the slowing up or cessation of plantation production would be inevitable. Then, when the war ended, would come the question of ownership. The right of "self-determination" has not yet been clearly defined, for no one knows how it is to be applied to colonial possessions. Thus the *Hevea* and *Ceara* plantations in Africa, formerly German, now held by the French, English and Portuguese—with whom shall they remain?

Holland is in a difficult situation. To remain neutral is to suffer and starve. To enter the war on either side is probable destruction.

THE PATRIOTIC PIRELLIS.

THE Pirelli interests with their great rubber factories in Italy, England and Spain, employing more than ten thousand workmen, are well known. Of the two brothers Pirelli, both officers in the Italian Army, Alberto is the best known in America, having visited the United States many times. That they should take an advanced position in preparedness and patriotism was perhaps to be expected, but is none the less worthy of comment and emulation.

In 1914, although there was no certainty of Italian participation in the world war, the Pirellis commenced preparation on a large scale. In addition to the great stock of rubber-covered field wire, ground sheets, and hospital goods, they piled up motor tires, pneumatic and solid. Acting with the Fiat Company that was massing standardized motor car parts, they prepared for a huge emergency call. When a year later the Italian Government called for fully equipped motor cars by the thousand, deliveries were prompt—Fiat, with Pirelli tires.

AS TO PROPERTY HELD BY ENEMY ALIENS AND TAKEN over by the Federal custodian, how about the German-owned *Hevea* plantations in the Philippines? Are they to be administered simply in the interest of the aliens or will they be purchased by Americans, a procedure that the Government is said to favor?

Rubber—Past, Present and Future.¹

The Growth of a Remarkable Industry—Its Two Great Booms—Effects of the War—The Future of Rubber and a Prophecy.

"AND what can you do?" asked King Solomon.

"Oh, Wisest of All Men," replied the visitor, "I can draw a white milk from the bark of trees and make it into an elastic gum. This I mix with brimstone and bake. This in turn I can fashion so that it is stronger than iron, more lasting than wood and stone, more flexible than leather. A cord made of it will stretch seven times its own length and return to its original shape without harm, and that thousands of times. Made into a cloak it will keep thee dry in a tempest of rain. It—"

But the executioner at a signal from the outraged king abruptly ended the tale.

A REMARKABLE INDUSTRY.

Mentally volplaning from B. C. down to A. D. 1918, the elastic resin industry would be just as unbelievable were it not for its unthinking acceptance by a people surfeited by miracles. Yet the rubber industry is actually more remarkable than aviation, the birds taught us that; than wireless telegraphy, the simple utilization of sound waves; than indeed any of the great triumphs of this industrial era. It is the most amazing combination of chemical legerdemain and industrial wizardry of the twentieth or any other century.

A tree milk becomes an elastic resin, and that in turn is transformed into a semi-metal, with a wider range of qualities, applications, and values, than any other known substance. The dream of the philosopher's stone and the transmutation of metals is not only accomplished in parallel but in a manner that is of infinitely broader scope and of far greater potential value. And this, not in laboratory experiment but on annual production reaches a scale of such magnitude that in the United States alone the some \$600,000,000 and furnishes employment and livelihood for 1,000,000 individuals.

Without going into the history of the business, the story of experiment, failure, and final success, in hundreds of attempts at new applications of the gum; let us glance at it as a whole today. Every industry, every profession, even "the most ancient," indeed every individual, utilizes rubber in some form. This calls for variety in treatment, in organization, and in factory appliance, hence the rubber industry as a whole is actually a baker's dozen of separate industries held together by the fact that they all use rubber. The divisions are: Tires, Mechanical Goods, Footwear, Clothing, Druggists' Sundries, Insulated Wire, Hard Rubber, Sporting Goods and Toys, Cements, Molded Specialties, Dental Rubber, Stamp Rubber and Notions.

WHERE RUBBER COMES FROM.

Getting back for the moment to the raw material, india rub-

ber comes from a great variety of trees, vines and shrubs from widely separated countries. Great tropical and sub-tropical areas, from Mexico to Uruguay in the Americas, from the Desert of Sahara to Cape Colony in Africa, from Southern India to Australia in the Far East, are vast rubber producers. These are exploited by natives wild, semi-wild, and tame, by the white, yellow and black races, and on a large scale. All supply rubber but of widely different quality and form. Thus: Amazonian pelles, Ceara, tears, Nicaraguan strip, African silk, Gold Coast flake, Assam balls, Borneos, and Malay Plantation crêpe, to cite a few only, are all types of rubber, and at the factory are to a degree interchangeable. Of these sorts the United States imported in the fiscal year 1917, 333,373,711 pounds.

There is also reclaimed rubber, which means that worn out rubber goods of all sorts are collected, the rubber extracted and used over again. This reclaimed rubber is the basis of a great industry in itself, the American production exceeding in pounds the total importation of crude rubber.

But that is not half the story. India rubber has the unique faculty of amalgamating with itself an almost countless variety of plastics, waxes, resinous gums, vegetable and mineral oils, earths, metallic oxides and sulphides, and taking from them qualities infinite in variety, and of great industrial value. Thus rubber and asbestos make a steam packing and brake lining similar but superior to any ductile metal. Other materials add

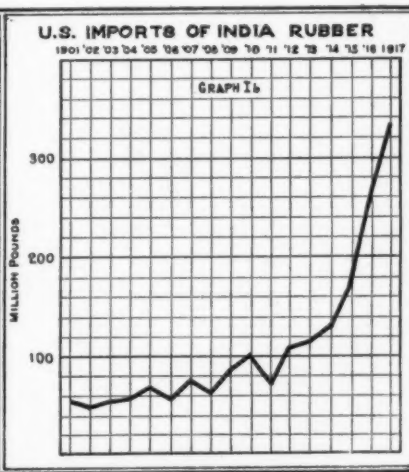
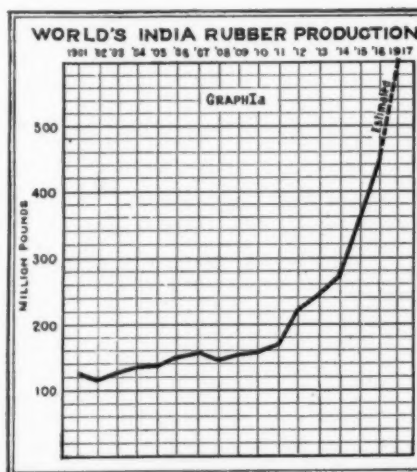
toughness, others still add oil, acid, and alkali-resisting qualities; one renders it as soft as an infant's cheek; another hard as stone; certain of them add to its resilience, others render it as un-stretchable as horsehide. Therefore the more than three hundred million pounds of crude rubber that enter American factories emerge,

plus fabrics, compounds and recovered rubber, a product from four to ten times as great, say 1,000,000,000 pounds.

A SECRETFIVE BUSINESS.

It will perhaps be apparent from the above to the most prejudiced pro-publicity mind, why the rubber industry has always been and ever will be, to a certain degree, a secret business. With infinite possibilities for substitution, for endless combinations of types of rubber and compounding materials, under the guidance of expert compounders and the ablest of industrial chemists, successful results are obtained in scores of different ways. Therefore there has grown up an industry possessed of individuality and initiative to a remarkable degree. These conditions and the consequent expertness, by the way, effectually smashed the "corners" in Para rubber attempted some years ago by Baron Gondariz and others; they also successfully curb "restricted output" and the artificial price-raising of plantation rubber often hinted at by rubber planters' associations.

The rubber business has experienced two great "booms."



¹ Contributed by the Editor of THE INDIA RUBBER WORLD to the "Business and Finance Series" in "The Magazine of Wall Street," March 2, 1918.

Really they were one and the same and had to do with the successful development of the automobile. The sudden demand for pneumatic tires forced crude rubber up to three times its normal value. That in turn enabled plantations in the Far East to show profits of several hundred per cent. As a result, Mincing Lane and its followers went wild, and rubber plantations in Ceylon, the Federated Malay States, Java, Borneo and Sumatra sprang into being over night. So great was the planting that in the Malay States alone the almost negligible product of 1905 grew from hundreds to thousands of tons in ten years' time, and to-day forms one-half of the world's product. This was the "crude rubber boom," hysterical but successful.

THE TIRE BOOM.

Meanwhile the other end of it, the tire boom, went on apace. Great factories were erected in a few weeks' time. Scores of new machines were invented to accomplish what had heretofore been done only by hand. Chemists, engineers, organizers, financiers, tackled the hardest job the rubber trade ever faced, and solved it successfully, on a huge scale, and without hysteria. It might be noted that certain tire stocks at one time selling below 100 rose to 200, 300 and even 1,000 as a result of this. Incidentally while turning out tires by the thousands, the manufacturers so notably increased the quality, that the average of 1,500 miles of wear at the beginning rose to 5,000 and in individual instances to 10,000 and even 20,000.

This restrained but eminently successful tire boom, that sent agents all over the world to purchase rubber, that induced the building of cotton mills for fabrics, and the planting of cotton fields for raw material, that sent American dollars to the Far East to purchase going rubber plantations; this great rubber impulse that further eventuated in the installation of huge American-made plantations, as for instance one of 50,000 acres in Sumatra, by far the greatest in the world, gave to the rubber business a wonderfully keen appreciation of the word "preparedness."

Hence "when in the course of *German* events" we were dragged into the world war the rubber industry was there with the goods. Trench boots and arctics were ready before marching feet were. Numbers of the great factories were already expert in making balloon fabrics on a large scale. Hundreds of miles of insulated wire were ready for use in the field. Airplane tires were standardized and built before the wing varnish was boiled. Ground sheets, ponchos, surgical supplies were already in stock. The trade, individual to the last degree, suddenly became unified, exchanged formulae, and gave over their plants, their men, and their knowledge to the Government.

To digress a moment as showing an unusual breadth of view—when England first entered the war, she placed an embargo upon India rubber. This was lifted through the efforts of The Rubber Association of America, Inc., as representative of the whole trade, the manufacturers agreeing to purchase crude rubber for their own use only and not for resale. So honestly did they live up to this agreement that while rubber arrived in greater volume than ever before, only 1/20 of one per cent went astray.

THE FUTURE.

As to the future there is sure to be a notable and steady increase in the pneumatic tire business. To-day we own some 4,000,000 automobiles that use, say, 20,000,000 tires annually. Really, the United States could afford 10,000,000 cars, which would mean 60,000,000 tires. Add to this the increasing business in bicycle and motorcycle tires and the total is a large one.

Nor is it at all probable that the theory that automobiles are "non-essentials" will be found tenable. The vast majority are used for business or professional purposes. Colonel Samuel P. Colt, president of the United States Rubber Co., after a thorough canvass of the field, states that less than 10 per cent of the automobiles in this country are used for recreation. Certainly this 10 per cent will be more than offset by the greatly increasing business demands. It should be remembered also that the present notable rubber impulse is in the line of solid truck tires. Many believe that, peace or war, this bids fair to become the greatest single item of rubber manufacture, outclassing even the pneumatic tire in volume. Of course, its greatest development

hinges on cheap motor fuel, but that in time is a certainty.

Glancing at the staple lines that go to make up the long-established portion of the business, all show a steady and normal growth year by year. Serving as a foundation for this great industry, they also act as an efficient and ever present stabilizer. In times of stress certain lines that may be termed luxuries are eliminated to come back on a larger scale with the advent of cheaper raw materials.

GREAT FUTURE PRODUCTION.

As to new rubber products there are many in sight; indeed, certain have al-

ready arrived, as, for example, the rubber and fiber sole that is displacing the oak leather article. Be it noted, however, that when crude rubber can be produced in quantity and at a margin of profit analogous to sugar in peace time (a future certainty), the expansion of the business in old and new lines will infinitely surpass the product of to-day, great as it is.

"But, what is one of the great future uses?" inquires the American Solomon.

"Oh, Most Short-sighted of Sovereigns," replies the writer, "I can take a tree milk and make it into an elastic resin. That resin baked with sulphur is turned into rosewood, walnut, mahogany, ebony, of the finest sort. Any rare wood can be simulated. It will not warp or check, it does not absorb moisture. Its sawdust and chips mold again into the first shape. Even the boards once out of use can be ground up and used again and again. I—"

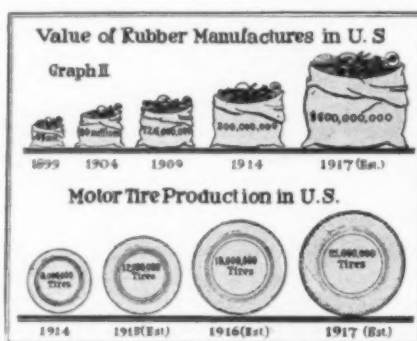
"Some time, perhaps," yawns the American Solomon.

CEYLON MANUFACTURES AUTOMOBILE TIRES.

The first automobile tire ever made in Ceylon was turned out of the mold at the mills of the Eastern & Colombo Taxicab Co., Limited, on November 12, 1917, thus inaugurating a new department of the works already turning out motor horn bulbs, mechanical goods, rubber packing, diaphragms, tires for toy vehicles, etc., of Ceylon crêpe rubber. The new tire was an oversize, 815 by 105 millimeters, made with seven plies of Egyptian cotton fabric and a tread 13/16 of an inch in thickness. Two very wide bead protection strips are carried all around on both sides for added strength. The tire was given a thorough road test before being placed on the market.

RUBBER IN TRINIDAD AND TOBAGO.

It is stated that the recent report of the committee of the Board of Agriculture of Trinidad and Tobago (reviewed in the January, 1918, issue of *THE INDIA RUBBER WORLD*) has given the rubber industry here a certain impetus. Small shipments of locally grown rubber continue to be shipped month by month, the total for the year ended December 31, 1917, being 22,224 pounds, which is encouraging when it is considered that the figures for 1915 and 1916 were 5,492 pounds and 10,170 pounds, respectively.



War News of the Rubber Industry.

Third Liberty Loan—American Gas Masks Superior to All Others—Home Service for American Soldiers Abroad—Tires for the Army by the Overland Route—Rubber Operatives Again to Cultivate War Gardens—War Notes and Personals—Emergency Fleet Corps Moved to Philadelphia—Letters from the Front—War Service Flags—Aviators Learn to Patch Balloon Fabric.

THE LIBERTY LOAN IN GREATER NEW YORK.

UNDER the capable leadership of Bertram G. Work, chairman, and ably assisted by the other members of the Special Liberty Loan Committee, which was appointed to represent the Rubber Industry of Greater New York, an aggressive campaign was planned and promptly launched on April 6.

On account of insufficient space in the offices of The Rubber Association of America, Inc., offices of the Rainbow Division were established at 1780 Broadway, through the courtesy of The B. F. Goodrich Co. Here a force of five stenographers and twenty-eight salesmen was organized under the direction of M. L. Heminway, secretary and publicity director, assisted by Alfred Borden of Procter & Borden, bankers, representing the Advisory Trades Committee, and William M. Hills and Joseph H. Groth of The B. F. Goodrich Co., as acting sales managers.

Hundreds of forceful letters, illustrated circulars, pamphlets, graphic posters and trade journal advertisements were distributed to the whole trade, and followed up by alert rubber salesmen whose services were donated by patriotic employers.

THIRD LIBERTY LOAN SALESMEN.

Amedee Spadone, The Gutta Percha & Rubber Manufacturing Co.,
J. Stuart Brown, The Gutta Percha & Rubber Manufacturing Co.,
J. A. Cole, Parker, Stearns & Co.,
C. A. Hadden, Hodgman Rubber Co.,
J. H. Lane, New York Belting & Packing Co.,
L. F. Purtil, New York Belting & Packing Co.,
Ralph Pomeroy, New York Rubber Co.,
B. R. Bell, New York Rubber Co.,
George E. Anderson, The B. F. Goodrich Co.,
T. Franklin Bludworth, The B. F. Goodrich Co.,
Joseph E. Powers, The B. F. Goodrich Co.,
Thomas C. Pollok, The B. F. Goodrich Co.,
Ray Rhyne, The B. F. Goodrich Co.,
William H. Hart, The B. F. Goodrich Co.,
William G. Treat, The B. F. Goodrich Co.,
C. A. Trafford, The B. F. Goodrich Co.,
Charles L. Wesscheer, The B. F. Goodrich Co.,
John Davern, The B. F. Goodrich Co.,
John Cotton Smith, United States Rubber Co.,
Nelson Smith, United States Rubber Co.,
C. E. Nichols, United States Rubber Co.,
J. S. Getty, United States Rubber Co.,
W. C. Hummel, United States Rubber Co.,
W. B. Wise, United States Rubber Co.,
J. E. Powers, Jr., United States Rubber Co.,
A. E. Wendover, United States Rubber Co.,
S. H. Cornell, United States Rubber Co.,
George C. Gaillard, United States Rubber Co.

A complete list of the subscribers will be published in our next issue. The largest subscription received was from the United States Rubber Co., who bought bonds to the amount of \$2,500,000, and placed \$1,500,000 of this amount through the New York committee. The B. F. Goodrich Co. bought \$1,750,000 worth of bonds, \$500,000 worth of bonds through New York

and \$1,250,000 through Akron. Other substantial subscriptions credited to the committee were as follows:

U. S. Rubber Reclaiming Co.	\$115,000
L. Littlejohn & Co., Inc.	100,000
F. R. Henderson & Co.	50,000
Poel & Kelly	30,000
Bertram G. Work	25,000
Rubber Association of America, Inc.	25,000
H. E. Raymond	25,000
O'Sullivan Rubber Co.	25,000
Hodgman Rubber Co.	25,000
Max Lowenthal	25,000
The H. F. Taintor Manufacturing Co.	20,000
Goodyear Rubber Co.	20,000
Chas. T. Wilson Co., Inc.	15,000
"The India Rubber World"	11,500
Gove & French	11,000
Parker, Stearns & Co.	10,000
William E. Bruyn	10,000
Bishop Gutta Percha Co.	10,000
Arthur H. Marks	10,000
Clarence H. Low	10,000
Raw Products Co.	10,000
E. H. Garcin	10,000

M. L. Heminway, of the Rubber Association of America, was fairly busy as secretary of the War Service Committee. Yet as secretary and publicity director of the Rainbow Division Special Liberty Loan Committee for the Rubber Industry of Greater New York he conducted a whirlwind campaign, combing the territory by letters, circulars, canvassers and telephone. The success of his efforts and that of his aides, together with the work of the committee he represented, is most gratifying.

THE LIBERTY LOAN PARADE.

A prominent feature of the Liberty Loan Parade

on Liberty Day, April 26, was the large American flag, measuring 50 by 75 feet, loaned for the occasion by the Yellow Dog Organization of Akron, Ohio. The flag occupied a place of honor at the head of the Rainbow Division of the Allied Trades and was carried in a horizontal position by 70 men, wearing white caps and gloves. \$1,200 in cash was thrown on the flag by patriotic bystanders. In the line of march representing the rubber industry, and led by Bertram G. Work, were the following:

George B. Hodgman, Hodgman Rubber Co.,
W. E. Bruyn, L. Littlejohn & Co.,
J. Newton Gunn, United States Rubber Co.,
W. J. Kelly, Poel & Kelly,
J. Russell Parker, Parker, Stearns & Co.,
Homer E. Sawyer, United States Rubber Co.,
Henry Spadone, The Gutta Percha & Rubber Manufacturing Co.,
Charles T. Wilson, Charles T. Wilson Co., Inc.,
Clarence H. Low, U. S. Rubber Reclaiming Co.,
H. J. Morehead, The B. F. Goodrich Co.,
Fred Newton, The B. F. Goodrich Co.,
J. Stuart Brown, Gutta Percha & Rubber Manufacturing Co.,
William J. Treat, The B. F. Goodrich Co.,
George E. Anderson, The B. F. Goodrich Co.



BERTRAM G. WORK.



M. L. HEMINWAY.

Nelson Smith, United States Rubber Co.
 J. S. Getty, United States Rubber Co.
 W. C. Hummell, United States Rubber Co.
 James H. Groth, The B. F. Goodrich Co.
 William M. Hills, The B. F. Goodrich Co.
 W. M. Morse, "The India Rubber World."
 M. L. Heminway, The Rubber Association of America, Inc.

LIBERTY LOAN NOTES.

As an incentive to employes, the Alfred Hale Rubber Co., Boston, Massachusetts, offered to pay the first instalment of 5 per cent to all desirous of subscribing to the Third Liberty Loan. The result is that all of the employes of the company have taken advantage of this offer, and the company has bought sufficient bonds to cover their requirements.

The United States Rubber Co., New York City, promptly subscribed for \$2,500,000 worth of bonds, which have been apportioned among the various factories and branches of the company.

Under the able leadership of T. W. Miller, county chairman of the War Savings Committee, and F. E. Myers, county chairman of the Liberty Loan Committee, Ashland County, Ohio, achieved a record on April 6 that has inspired the nation. In ten hours the Liberty Loan quota was sold and has since been 50 per cent oversubscribed. On the same day Ashland city banks and the postoffice sold more than \$10,000 in War Savings Stamps, and it is believed that the previous campaign and sales of these stamps stimulated the sale of bonds. War Savings Stamp sales for Ashland County now aggregate \$500,000, or more than \$20 for every man, woman and child. Mr. Miller is president and Mr. Myers a director of The Faultless Rubber Co., Ashland, Ohio.

Reports covering the first nine days of the Third Liberty Loan drive indicate that the rubber industry of New England had subscribed at least \$1,100,000 with the campaign still going strong. At the Hood Rubber Co., Watertown, Massachusetts, there has been a steady increase in interest and subscriptions. During the first nine days of the drive for the first loan 1,000 persons subscribed \$79,000; during the corresponding period of the second loan drive 2,000 persons subscribed \$135,000, and during the first nine days of the present drive 3,200 persons subscribed \$195,000. The company subscribed \$500,000 to cover the requirements of its employes.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has passed the \$125,000 mark and expects to reach at least \$250,000.

The Boston Rubber Shoe Co., Boston, Massachusetts, reports that 1,114 of its employes subscribed \$66,400 during the first nine days of the campaign.

President Wilson accepted the use of the Pennsylvania Rubber Co.'s electric sign on Columbus Circle, New York City, in connection with the Third Liberty Loan advertising campaign.

The United States Rubber Co. subscribed \$10,000 towards the Third Liberty Loan quota of Minneapolis, Minnesota. The com-

pany is said to have contributed more space to Liberty Loan advertising than any other business firm.

The St. Paul Rubber Co., Northwestern branch of the United States Rubber Co., celebrated "Liberty Day" at its plant, St. Paul, Minnesota, on April 16, and expects to be a 100 per cent subscriber to the Third Liberty Loan.

FISK WAR SERVICE BOARD AND AUXILIARY.

Employees of The Fisk Rubber Co., Chicopee Falls, Massachusetts, who enrolled 97.33 per cent of all Fisk operatives in the second Liberty Loan, late in March organized the Fisk War Service Board to coordinate and bring about a thorough organization of all war-time work. It has had charge of the Third Liberty Loan drive and will undertake various other activities in cooperation with the more recently formed Women's Auxiliary. The auxiliary will perform certain clerical work; will assist the Red Cross in different ways, and will have in its charge numberless works best performed by the gentler sex, yet in no sense less important to the winning of the war. Fisk employes are second to none in practical patriotism.

AVIATORS LEARN TO PATCH BALLOON FABRIC.

The repair as well as the flying of aircraft forms a necessary part of the training of all military aviators of whatever nationality. Men who are to fly dirigibles must add a knowledge of the patching of balloon fabrics to their personal mechanical equipment. A most interesting sight is to see a class of British naval aviators learning the details of this important art in one of the naval training stations of England.

LIBERTY LOAN DISPLAY WINDOW OF THE NEW YORK RUBBER COMMITTEE.

The accompanying illustration of the Liberty Loan window, donated by The B. F. Goodrich Co., 1780 Broadway, New York, is one of the most attractive displays in the city. It centers around a large reproduction in colors of a painting, "The Elbow Touch," described as follows:

"THE ELBOW TOUCH."

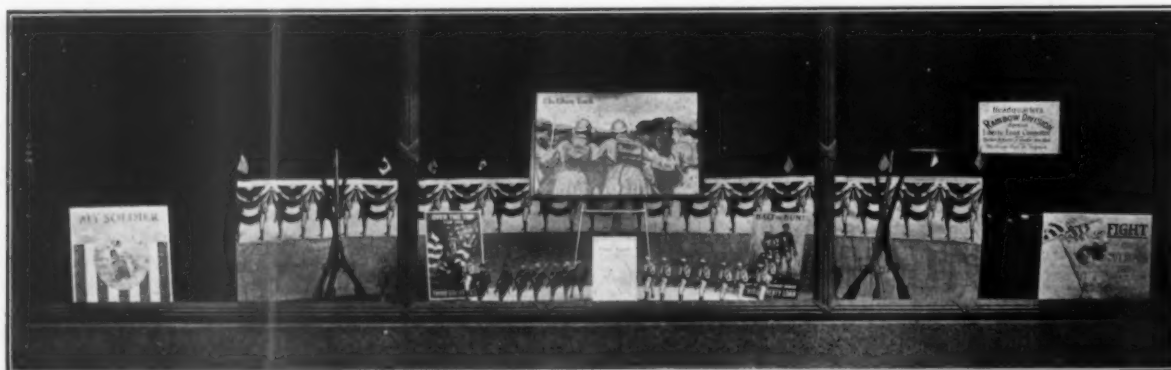
Dawn is breaking—the great offensive is at hand.
 Beyond crashes the tremendous barrage—the air is filled with
 the angry swish of hurtling shells—
 Death operates busily.

Three minutes—two—the soldier advances. His limbs quake.
 "Over the top" and the pageant of death beats against his brain.

A hand—firm and cool—presses his elbow. It brings him back—
 clears his whirling brain.

"Steady, my boy, steady!" it seems to say, and almost instinctively
 he too reaches out and touches the arm of the man beside him.

Down the line it goes—the "elbow touch"—the mental stimulant
 —the new-born confidence, saying
 "We are ONE—we shall win!"



THE LIBERTY LOAN WINDOW DISPLAY OF THE NEW YORK RUBBER TRADE COMMITTEE.

AMERICAN GAS MASKS SUPERIOR TO ALL OTHERS.

American casualties noted in a gas attack some time ago illustrated the experience of all the European armies, that the success of the barbarous weapon revived by the Germans is dependent largely on surprise, since improved masks have eliminated all danger if the men have time to put them on. The Americans were caught asleep or before they were able to adjust their masks, which experts sent to this country by the Allied governments have pronounced the most efficient in existence.

Gas masks of the small box respirator type are now being manufactured at a rate which insures an ample supply for the troops abroad and for training at home.

Cotton fabric, carefully rubberized and cut to fit various types of faces, forms the impervious facepiece of the American mask, which is held in place by a network of elastic bands over the head. The ears are left uncovered, and sight is provided through celluloid or glass eyepieces.

A canister filled with several layers of secret chemicals is carried in a small knapsack and is connected with the mask by a flexible tube passing through the facepiece and terminating in a rubber mouthpiece. A nose clamp with rubber pads forces the wearer to breathe through his mouth, the air being taken in through the canister, and any gas being neutralized or rendered harmless by the absorbent chemicals. The outgoing breath passes outside the facepiece, through a small rubber valve.

In the German mask the container for the neutralizing chemicals is screwed onto a ring at the bottom of the mask. There is no outlet valve for the exhaled breath, both incoming and outgoing air passing through the container.

The canisters of the American mask are detachable from the tube. When a canister has lost its efficiency it can be replaced by a new one. The chemicals in each canister will neutralize the heaviest concentrations of gases for a period at least ten times longer than the possible duration of any gas attack.

In every knapsack is a record card on which each soldier must enter the time that his mask

has been exposed to gas. This makes it possible to judge accurately when

there is any danger of the chemicals ceasing to be effective. Before that point is reached a new mask is issued.

The mask is carried in a knapsack at the left hip, the supporting straps being shortened when a danger zone is entered, so that the mask rests on the chest at the "alert" position.

A soldier has merely to open the knapsack, pull out the flexible hose with the facepiece attached, put the rubber mouthpiece in his mouth, and adjust the bands over his head. The nose clip can be placed in position after the mask is on. This nose-

piece insures that even if the fabric of the facepiece should be pierced, the soldier would still be breathing entirely through his mouth.

Improvements are being made in special gas-detecting devices, and men are being trained to know when a gas attack is coming and to adjust their masks in six seconds or less. An alarm is given by horns, whistles or rattles.

Members of the American engineering division in France are equipped with a more elaborate oxygen inhalator device, which supplies plenty of pure air for breathing during mining operations, and which will also be used in rescue work during enemy gas attacks.

Great progress has also been made in the development of gas masks

for horses, mules, and dogs, and even carrier pigeons have received attention. Each bird is not provided with a separate mask, but the cages in which they are confined are covered with preparations which prevent any of the deadly gases reaching the interior.

HOME SERVICE FOR AMERICAN SOLDIERS ABROAD.

Frederic C. Hood, treasurer and general manager of the Hood Rubber Co., Watertown, Massachusetts, is treasurer of Home Service for American Soldiers Abroad, established in 1915, and the real power which has made possible the good work being done by it. Mrs. Frederic C. Hood is a member of the executive committee. This organization, which has the friendly approval of the Y. M. C. A. and the personal endorsement of many eminent Americans, acts by proxy in Paris for relatives and friends of American soldiers fighting abroad. It maintains

a home in Paris where the men can stay when on leave also an attractive villa in the recreation zone at Aix-les-Bains, and arrangements are under way for securing accommodations in other cities of France. Home influences, comfortable living and reading rooms, books, magazines, pianos with the latest songs from home, and bathing and sleeping accommodations are very welcome to the men on leave. Tea is served without charge every afternoon from four to six. Mrs. Alice S. Weeks, who is conducting the work communicates regularly with every man by letter and keeps his family in touch with him as far as possible; both the men and their families receive individual attention. Special activities keep up the supply of clothing and necessary comforts. In addition to the regular subscription, special funds are accepted for individual men to be disbursed as directed to supply the personal needs of the soldier more quickly than is possible through the machinery of the Government.

The present unit is being extended to provide for 500 men, about 400 having been enrolled on March 1. Mr. Hood has enrolled nearly one hundred of his employees and is adding more as he can get their addresses, and in many other ways is making



(C) Committee on Public Information.
AMERICAN GAS MASK IN
POSITION.



(C) Committee on Public Information.
AMERICAN GAS MASK.



(C) Committee on Public Information.

GERMAN GAS MASK.

himself felt. Rubber men everywhere are invited to join in sustaining the present unit and in developing others. Donations to the general fund will be used to defray the expense of those enrolled who are not in a position to contribute, and also to take care of unforeseen contingencies that may arise. It is estimated that the overhead yearly expense will be \$30 per man and it is hoped that \$50,000 may be subscribed for this splendid work.

TIRES FOR THE ARMY BY THE OVERLAND ROUTE.

Breaking all previous records for size and speed, a train of 90 trucks of the United States Quartermaster's Corps, manned



ARMY TRUCKS AT THE GOODRICH FACTORY TO RECEIVE RUBBER GOODS FOR PERSHING'S ARMY.

by 250 drivers and soldiers, recently completed a run from Detroit, Michigan, to an Atlantic port of embarkation for France. This great caravan of transports diverged 12 miles from the regular, overland route to Akron, Ohio, where a capacity cargo of solid tires and inner tubes was loaded.

Goodrich officials provided special cots, shower baths and other accommodations for the soldiers during their overnight stay in the "Rubber City." Although 20 hours' time was lost in loading, the long line of olive-drab transports, composed of three full truck companies, climbed the steep grades of the mountains of Pennsylvania and arrived at the seaboard still a few hours ahead of the estimated time.

The Akron trip was the result of an urgent request from General Pershing for a shipment of solid tires and inner tubes. To employ the fastest means of freight transportation, under existing conditions, the Government dispatched this great train of motor trucks to convey this emergency shipment. So successful has been this demonstration of speed and efficiency that the Government is planning to send many additional truck trains to Akron for rubber supplies destined for our forces in France.

According to a statement authorized by the Quartermaster General of the Army, the war trucks which are "delivering themselves" and also carrying munitions and other supplies for shipment to France, will actually relieve over 15,000 freight cars, thereby furnishing a substantial aid to shippers during the present congestion. Adequate opportunity for the training of an effective corps of transport drivers and officers will also be provided.

RUBBER OPERATIVES AGAIN TO CULTIVATE WAR GARDENS.

Following last year's success, the Goodyear Tire & Rubber Co., Akron, Ohio, is continuing its offer to employees to permit the cultivation of about forty acres of the company's land not needed immediately for other purposes.

The tract has been divided into plots, 50 by 100 feet. Plowing and harrowing will be performed by the company without expense to the gardener. The labor department will distribute prizes to those who work their plots with the greatest measure of success and will also furnish information as to kinds of vegetables to which the soil is best adapted and how to grow them.

The girls of the military drill classes, subscribing to the slogan, "Food Will Win the War," are planning to cultivate several of these plots. Before long it will be a common sight to see the Goodyear girls marching to work, armed with hoes, rakes and other garden tools.

The cultivation of these war gardens will not only aid in cutting down present high living costs and release the same amount of food for consumption elsewhere, but will also give many factory and office workers an opportunity to obtain healthful outdoor exercise.

WAR SERVICE PERSONALS.

The manner in which many of the young men, directly or indirectly connected with the United States Rubber System,

promptly responded to the call "to make the world safe for democracy," is well exemplified by Lieutenant Russell G. Colt, the eldest son of Colonel Samuel P. Colt, president of the United States Rubber Co.



LIEUTENANT RUSSELL G. COTT.

Lieutenant Colt, who is a member of the banking firm of H. Horton & Co., New York City, and whose wife is the well-known actress, Ethel Barrymore, was at Plattsburg for training in 1916 and 1917. After

the 1917 encampment, he went to France, where he offered himself for immediate service, but was rejected owing to a slight physical disability. He at once returned to this country, and enlisted in the Aviation Corps, recently receiving his commission as Second Lieutenant. He is now at Mineola, New York, with the Signal Corps, Aviation Section, and expects to be back in France in the very near future.

Major H. Stuart Hotchkiss, of the Signal Corps of the Army, has been ordered to the American Embassy, London, England, as assistant military attaché. Major Hotchkiss is second vice-president of The Rubber Association of America, Inc., New York City.

C. R. Dooley, manager of the educational department of the Westinghouse Electric and Manufacturing Company, has been granted a leave of absence to accept an appointment by the Government as director of the vocational educational project for army needs, now being developed by the War Department committee on educational and special training. He will be located in the War Department at Washington, District of Columbia.

This appointment comes as a direct recognition of Mr. Dooley's ability as a practical educator and organizer of men, and it is not the first time he has been summoned to the aid of the Government.

With the assembling of the first drafted men at Camp Sherman, Mr. Dooley was given the task of instituting and putting

into operation a system of classification, by which it is possible, in a few minutes, to select from the men in the cantonment the one best fitted for any particular class of service. The efficient manner in which this system was installed is largely responsible for Mr. Dooley's second call from the Government.

During Mr. Dooley's absence from the Westinghouse company, his duties there will be assumed by C. S. Coler, who has been appointed acting manager of the educational department.



CORPORAL
JOSEPH N. WALKER.

Corporal Joseph N. Walker, formerly of the sales force of the Maryland Rubber Co., the Baltimore, Maryland, branch of the United States Rubber Co., is one of five Baltimoreans decorated with the Croix de Guerre by the French Government. He is the son of Mr. and Mrs. George N. Walker, 390 East 31st street, Baltimore.

For conspicuous gallantry and devotion to duty in the battle of Passchendaele, Driver B. A. Northam was awarded the Distinguished Service Medal. His gun team came under heavy fire on a road congested with traffic and many casualties resulted. He remained at his post and took the gun into action along with the greatest courage and determination.

Driver Northam is a son of W. B. Northam, general sales manager of the Dunlop Tire & Rubber Co., Limited, Toronto, Ontario, Canada. He joined the 34th Battery at Kingston, and was later transferred to the 33d. He went through the big fight at the Somme. He has been offered a commission with the Royal Flying Corps.

Dr. J. Warren Stearns, a leading Boston psychopathist, cousin of the Editor of THE INDIA RUBBER WORLD, is a volunteer surgeon in the Navy and has become a notable assistant surgeon of the Naval Reserve force at San Francisco, California. His special duty is to give the psychiatric examination to recruits. This is a new work which has been undertaken. No precedents had been established. For this reason the first effort was to seek out and understand the special problem presented. It has been proved that nervous and mental diseases occurring in the naval service often antedate enlistment. The report of the surgeon general reveals many instances of this fact. Dr. Stearns' work is interesting and enlightening in its details. That it is being more and more recognized and applied is evident. During Dr. Stearns' period of service in California he has won the confidence and esteem of many, both in public and private service.

Winthrop Brown, Jr., sales manager of the Davidson Rubber Co., Boston, Massachusetts, has enlisted. His duties for this

company will be assumed by Philip I. Coryell, formerly salesman in the New York district.

Darwin R. James, Jr., president of the American Chicle Co., New York City, is acting chairman of the National Thrift Bond Corp. while Henry Bruere is in Europe.

The Dry Climate Tire Manufacturing Co., Arvada, Colorado, has two men in service—B. Bruggeman, who is in the aviation service, and Emmett McKenney, who is in the navy.

In the office of the Boston Woven Hose Rubber Co., Cambridge, Massachusetts, there hangs a framed and handsomely embellished roll of honor showing the men who have gone from this company's employ to answer their country's call, and also



WAR SERVICE LIST OF THE BOSTON WOVEN HOSE & RUBBER CO.

the branch of service with which each is engaged. This ever-growing list is numbered among the company's most highly prized possessions. At the time the accompanying photograph was made, 97 names were enrolled, but seven more have since been added, making a total of 104 men now in service. The names thus far issued, aside from those published in THE INDIA RUBBER WORLD of August 1, 1917, will appear in The Rubber Trade Roll of Honor in a subsequent issue.

EMERGENCY FLEET CORP. MOVED TO PHILADELPHIA.

With the appointment of Charles M. Schwab as director-general of the shipbuilding program, comes the announcement that the work will be transferred to and directed from Philadelphia, Pennsylvania, thus helping to relieve the congestion in Washington, due to the influx of government workers. Simultaneously comes the additional announcement that Charles N. Piez, president of the Link-Belt Co., Chicago, Illinois, and Philadelphia, Pennsylvania, will remain the vice-president of the Emergency Fleet Corporation and will have charge of the offices of the corporation in the Gomery-Schwartz building, Broad and Cherry streets, Philadelphia.



DR. J. WARREN STEARNS.



LETTERS FROM THE FRONT

WELL CARED FOR AND EAGER TO BE AT THE FRONT.

The following is from a young American attached to one of the flying squadrons in France. As this was a month in transit, he is doubtless now doing his bit in air scouting, the work he so patently longed for:

AT THE FRONT.

DEAR —: Am now at my new home, and attached to the Aero Squadron, and also very near the front. We can hear the guns from up on the front and they shake our barracks, so you can see we are not many miles from action.

The first night we were here our machines were kept busy for about an hour buzzing around in the sky, looking for the Boches, who were intending to raid us. It was very interesting to watch the lights and flares flash out their signals to our batteries and then continue their buzzing and searching for the Germans. However, there was no real excitement, but I expect we will get to see some before long. Have been having lots of rain the last three or four days and nights, consequently no activity.

We have very pleasant quarters, good food and everything is excellent in spite of the fact that we are on the front. This is a great improvement on our last location, which was very far from the front, and this goes to show that Uncle Sam is doing his best to take good care of us. I like it very much here, although we have lots of mud and expect to be here for about one month. Then we will go out and fly over the lines.

I am anxious to get out there, as I feel I am able and am going to do something for Uncle Sam and the folks at home.

I spent about four days in Paris and had a fine time. It is an interesting and beautiful city. Passed most of my time taking in the points of interest, among which was Guynemer's first machine, with which he shot down ten Huns. Also had an air raid while in Paris. Didn't worry us much, however.

Sincerely, —.

FROM A WARM-HEARTED IRISH-AMERICAN.

RIGHT HERE IN FRANCE.

DEAR —: The sky was clear and the air had just a tinge of frost in it. The men stepped off with a snap and a will. The road was hard and smooth, graded and curved to surmount a fairly high hill.

We arrived at — and soon after marching up crooked, narrow streets, were near our place of regimental formation.

In the public square, called Place —, the entire regiment assembled. When I write the entire regiment, I mean it, for to-day the supply company, which drives the four-mule teams, the horse-shoer, the saddler, and clerks were all there, clothed in their field best and armed with their rifles. On a truck the field altar had been erected and here Father O'Conner said mass, with an Episcopalian rector assisting in the service, while — preached the sermon. Not a sermon for an average — congregation, but one as it would be given unvarnished but solid.

Such a setting, and how long it will be remembered! The windows of the old houses were filled with spectators, some curious, others devout. In one window a little demoiselle followed the service with her prayer-book, while in another a movie camera ticked off reels of films, and even an American newspaperman worked his camera to record the scene.

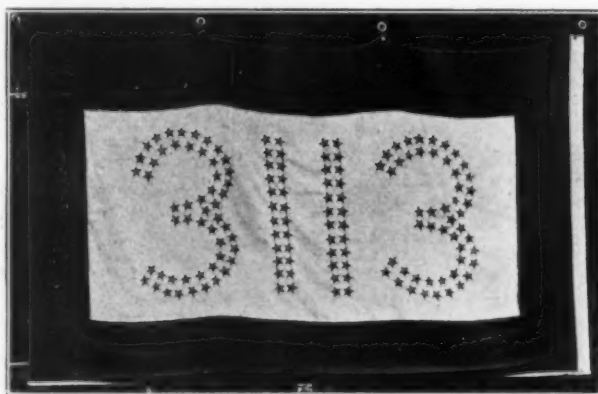
Mass being over, a few men were baptized and then "Officers" rang out on the trumpet. The officers assembled around our division commander and here were presented the Regimental Colors. The presentation speech of — was not very long in words, but in spirit it will last forever. The sun beat down to glorify the spot. Taking the new flag in his arms the general pointed to the national one and said: "That flag (meaning the Stars and Stripes) stands for your country. This flag stands for your home. Take care of them well." And as we stood there at salute and the band played "Shouting the Battle Cry of Freedom," I know many hearts must have gone far away to the land we had left.

We then formed for review by —, and with our new colors flying high, how we stepped out! No need to urge heads or eyes up, for the blood of men was in the ranks and they cared not who knew it. We are an Irish regiment and every man in it is proud to serve in this outfit and loves America. Not a mule nor a wheel but bears the brand "Y. D.," which means the "Yankee Division"! And the — will sing on its way the division song, "The Battle Hymn of the Republic" as earnestly and strongly as any other regiment.

Yours truly, —.

SERVICE FLAGS.

A new service flag 20 by 30 feet now flies from the northwest corner of the factory of the Pennsylvania Rubber Co., Jeannette, Pennsylvania. It bears 130 stars for those from the factory, office, and sixteen branches, including the president and vice-president of the company, who have answered the "call to the colors." No rubber company of equal size has given more men or contributed more liberally to the Liberty Loan, Red Cross, Thrift Stamps and all other patriotic movements.



WESTINGHOUSE ELECTRIC & MANUFACTURING Co.'s SERVICE FLAG.

The Westinghouse Electric & Manufacturing Co., at its works at East Pittsburgh, Pennsylvania, displays a service flag representing 3,113 enlistments, but instead of that many stars the flag has the figures made of stars against a white background.

SUMATRA RUBBER PRODUCTION.

Statistics for the production of rubber in Sumatra during 1917 are not yet available, but it has been reported that 21,000 tons of rubber were shipped from Deli during the year. Planters consider the amount satisfactory and state that an increasing demand for their crop has been felt.

The Rubber Association of America, Inc.

QUARTERLY MEETING OF THE BOARD OF DIRECTORS.

THE regular quarterly meeting of the board of directors was held Friday evening, April 19, at the Union League Club, those present being Messrs. Work, Wilson, Lowman, Daniel Kelly, Litchfield, Lambert, Dunn, Gunn, secretary Vorhis, and ex-presidents Hodgman and Firestone. At this meeting the purchase of \$25,000 of the Third Liberty Loan bonds was authorized.

Vacancies in the nominating committee were filled by the appointments of Guy E. Norwood, Republic Rubber Corp., Youngstown, Ohio, and W. L. Pitcher, Easthampton Rubber Thread Co., Easthampton, Massachusetts, and the vacancy in the banquet committee was filled by the appointment of Horace DeLisser, Ajax Rubber Co., New York City. It was voted that the dues of those members of the association who are in government service at foreign stations shall be remitted.

EXECUTIVE COMMITTEE MEETING.

The executive committee meeting was held April 19 at the Union League Club, New York City, and Messrs. Work, Firestone, Litchfield, Kelly and Gunn were present. The following firm and associate members were elected:

FIRM MEMBERS AND REPRESENTATIVES.

General Electric Co., L. G. Banker, Schenectady, New York.
East Asiatic Co., New York Agency, Inc., K. Keller, 60 Wall street, New York City.

Canton Rubber Co., George W. Weeks, Canton, Ohio.
Petley Rubber Manufacturing Co., James R. Petley, 241 Oregon street, Milwaukee, Wisconsin.

Ray Tire & Rubber Co., William F. Ray, 833 Rees street, Chicago, Illinois.

ASSOCIATE MEMBERS.

P. R. Westley, Davol Rubber Co., Providence, Rhode Island.
Arthur A. Frank, Federal Rubber Co., Cudahy, Wisconsin.
J. S. Bretson, Phoenix Rubber Co., Akron, Ohio.
John T. Crowley, Beacon Falls Rubber Shoe Co., Beacon Falls, Massachusetts.

Daniel E. Gray, Beacon Falls Rubber Shoe Co., Beacon Falls, Massachusetts.

A. Melville Astor, Stowe, Woodward Co., 210 East 17th street, New York City.

Albert Y. Tucker, United States Rubber Co., 1790 Broadway, New York City.

DIVISIONS' MEETINGS.

RUBBER SUNDRIES MANUFACTURERS' DIVISION.

At a meeting of the special committee of the Rubber Sundries Manufacturers' Division held April 3, a report on standardization of sizes and elimination of unnecessary types of druggists' sundries was authorized and will be presented for approval at the regular monthly meeting to be held on May 15.

THE MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION.

There were thirty-five members present at the meeting of the Mechanical Rubber Goods Manufacturers' Division that was held on April 16 at the Whitehall Club, New York City. After the regular business of the division was disposed of, E. R. Kenzel, of the Federal Reserve Bank of New York, gave an interesting talk on trade acceptances.

THE RUBBER AND FIBER SOLE MANUFACTURERS' DIVISION.

The meeting of this division took place at the Hotel Touraine, Boston, Massachusetts, on April 15, when important business

matters concerning this division were discussed. On the same day there was a meeting of the Rubber Heel Club.

WAR SERVICE COMMITTEE OF THE RUBBER INDUSTRY OF THE U. S. A.

On the evening of April 16 the Mechanical, Technical and Commercial Divisions of the War Service Committee held a joint meeting and discussed the question of standardization of sizes and the elimination of unnecessary types of mechanical rubber goods. This meeting was held in response to instructions sent out by the Commercial Economy Board of the Council of National Defense.

WHEAT FLOUR SUBSTITUTES.

Attention is called to the following instructions issued by the United States Food Administration:

Five per cent (5%) low-grade flour shall not be sold for purposes other than human consumption, except by special permission from the United States Food Administration. Requests for the permission of sale and use of wheat flour for purposes other than human consumption shall be referred in writing to the United States Food Administration, Distribution Department, Washington, District of Columbia, stating specifically amounts and purposes of and for which flour is to be used.

The following substitutes have been suggested as practicable by those who have already substituted them for wheat flour: "Goulack," aluminum flake, barley flour, barytes, cassava, cement, cereal flour, cloth fiber, corn meal, corn starch, core compound, dextrine, flour unsuitable for food purposes, fossil flour, glue, graphite, lithopone, mica, paris white, pitch compound, paste, potato flour, precipitate of lime, precipitated whiting, pumice stone, rice flour, rye flour, sago, soapstone, talcum powder, tapioca flour, cotton linters.

EXPORT SHIPMENTS TO CANADA.

The Bureau of Exports of the War Trade Board at Washington reports that new rulings covering the export of rubber and rubber manufactured goods were put in effect on April 10, 1918. The only changes in the previous rulings are as follows:

1. No license will be granted for scrap rubber except to Canada.

2. Individual licenses for manufactured articles containing rubber will not be required for Canada or Newfoundland.

Members of the trade are requested to govern themselves in accordance with the above instructions in their future applications for licenses in order that the War Trade Board may be saved the work of passing upon applications for the export of rubber goods to Canada.

PREFERENCE ORDERED FOR ESSENTIAL INDUSTRIES.

The War Industries Board has promulgated a preference list of industries essential to the conduct of the war, to which priority will be accorded in the supply and transportation of coal and coke and of raw materials necessary to their manufacturing activities. The list is subject to expansion through the certification of such other classes of industry as may be deemed essential to the war. No attempt has been made in issuing this list to rank any industry as non-essential or to curtail the fuel supply of any particular industry or plant. Its operation, however, in times of a shortage of fuel or transportation, will tend inevitably to cut down the amount of coal and coke furnished to plants not on the list, and as it is extended this effect will be more marked.

Preference List No. 1 includes among its many items plants engaged exclusively in manufacturing chemicals; plants manufacturing electrical equipment, and plants printing newspapers and periodicals exclusively.



THE GREAT IRRIGATION CANALS OF THE

A Desert Rubber-Cotton Plantation.

By the Editor of the India Rubber World.

The Fascination of the Desert—Irrigated Oases—Desert Cotton Fields—A Planting Suggestion Bears Fruit—A Newspaper Confession—A Visit to the Casa Grande Valley—The Salt River Valley—The Cotton City Man Takes the Writer to "Goodyear"—Interesting Facts Concerning a Vast Rubber-Cotton Enterprise—Other Upland Valleys Go in for Cotton.

THE desert has always had a fascination for me. Especially as I recall from former journeyings the vast uplands, sparsely clothed with mesquite, cactus, ocotillo and sage brush, bordered by high mountains, dry, hot, tenantless. That this winter's work should lead me into the desert was therefore a pleasure. It took weeks to see the vast dry plains of the American Southwest as I wished to see them. My trips by train, stage and motor were chiefly through a series of level valleys, twenty, thirty, and even fifty miles in width, in appearance almost an exact counterpart of the Mexican upland plains, the altitude varying from 1,000 to 3,000 feet. Not that the country is all desert to-day. The great water reservoirs of the United States Reclamation Service, together with hundreds of wells driven by private enterprises, have transformed great areas into fertile fields of alfalfa, cotton and maize, and where solitary water tanks once were the only signs of human habitation, are towns and cities. Taken as a whole, however, the cultivated and settled portions cover only a small part of the present desert country.

Although that was not my quest, I found myself, after a little, viewing and investigating cotton. Not that I have ever qualified as a cotton expert. What I know of the Sea Island varieties as grown in Barbados and the other West Indian Islands, of the

attempts at hybridization in Trinidad and so on, was acquired by accident rather than intention. With the planting of cotton fields by rubber men, however, it behooved me to brush up my fragmentary knowledge and at least be able to chronicle a cotton triumph for our own trade.

Aside from this it seems that I am responsible for at least one enterprise of the cotton planting variety. The knowledge came as a distinct surprise and in this manner: we were far out on the plains and had stopped the car to "cool off" (the result of a wild chase after a jack-rabbit through sage brush, shallow washouts and mesquite thickets). There was no hurry, so I pulled out a pad and was writing an editorial when the driver, who was reading an Arizona paper, said, "Somepin' about you here," and this is what I read:

It is a curious fact that a year ago Mr. Pearson, on his way to the Philippines, paused in a Pacific port and met there a gentleman thoroughly cognizant with Arizona affairs. This gentleman was quite interested at that time in learning about rubber planting, and quizzed about it very searchingly. The result of that, however, was the definite advice on the part of the rubber man to look into cotton as being something that was not only close at hand, but that was thoroughly American—that was quick in its results, and as far as human foresight could go, bound to be exceedingly productive in the way of monetary returns. The result of this conversa-



THE GOODYEAR LAND BEFORE CLEARING.



COTTON FIELDS AT GOODYEAR, ARIZONA.

tion is a project now being developed in the Casa Grande Valley of Arizona.

This year, in passing through Arizona, he visited the section where Cotton City is being laid out and expressed himself as being convinced that the wonderful results that have been attained in planting the Pima variety of cotton elsewhere in the Southwest would be duplicated and perhaps exceeded in the Casa Grande Valley.

I recalled the episode, and I had but a few days before motored through the Casa Grande Valley and out to the site of Cotton City. Had I known then that I was responsible for the broad acres being smoothed into shape by huge tractors, the great wells that sent out cataracts of water, I should certainly have been very proud. However, it is easy to suggest—anyone can do it—Darius Green suggested flying machines. This reflection restored my pristine modesty and we motored on.

At Chandler, I ran into the Cotton City man, a big, breezy, alert individual, who knew everybody and everything about cotton. When he found that I wanted to see the Goodyear project, his car was around in a jiffy and we were on the way, almost before the handshaking was over. Of the facts, figures and statistics that poured into my stunned ears, these I recall:

To begin with, he was very enthusiastic about what the Goodyear company, really the Southwest Cotton Co., had done in cotton planting. According to his story of the great area they have in Chandler, a part of it is owned outright, on which they drill wells, install pumps, clear and build irrigation ditches and so on. Then there are large tracts for which they pay rent, figured at 6 per cent on \$150 per acre, with an option to purchase at the end of five years.

This land is irrigated partly by means of huge wells, from which the water is pumped by motors, the current coming from

the Roosevelt dam. According to his statement, some 10,000 acres are already in cotton. Certainly, reviewing the vast fields, no one would be inclined to question this estimate.

Nor is this the only Goodyear plantation. At Avondale, some miles away, is another great area. Here there are 6,000 acres already planted and 10,000 more to be put in. In the middle of this tract there is a great well from which 18,000 gallons of water per minute are pumped. All of this is owned by the Southwest Cotton Co. Land experts in this region state that the land first cost \$15 per acre; added to this is \$17 for clearing and leveling; \$25 for wells and irrigation canals; a total of \$57 per acre. As to cotton production, it is estimated at three-fourths of a bale per acre the first year and a bale a year thereafter. Incidentally, such land subdivided readily sells for \$200 an acre. Still relying on local informants, the product of the Goodyear areas was 6,000 bales last year, or 3,000,000 pounds.

While the Southwestern Cotton Co. is the biggest of all, it is not the only cotton fancier in that part of the world. In the Salt River and Casa Grande Valleys the talk is only of cotton. This, of course, has come about through the remarkable profits gained by those who were lucky enough to go into it right. For the successful ones who raised a bale an acre there was the cost of \$135 per acre, offset by the sale of the cotton at 70 cents a pound and the seed at \$2.50 per hundred, or \$370, with a net profit of \$235 per acre.

That the acreage will be great this year is already assured. From 100,000 to 125,000 acres are the figures mentioned as against 40,000 acres last year.

As to the general desert proposition, the Imperial Valley of Southern California, the Salt River and the Casa Grande Valleys of Arizona, and the Pecos Valley of New Mexico, indeed



TENT ENCAMPMENT WHERE THE TOWN OF GOODYEAR IS RAPIDLY TAKING SHAPE.

all of the great upland plains of the Southwest, are planting cotton. And it is largely long-fibered, and so far, through the



BIG WELL AT COTTON CITY.

alertness of the government inspectors, the boll weevil has not been able to get into these virgin fields.

THE STORY OF BALED RUBBER.

SHIPPING plantation rubber in compressed bales has for some time been the subject of investigation in the producing centers of the Far East. Experimental shipments of baled rubber have already been made, and although compressed by crudely constructed presses, the results have fully verified the practicability and efficiency of the plan.

When the War Trade Board announced that imports of raw materials, including crude rubber, would possibly be curtailed to conserve every cubic foot of ocean shipping space, the trade was confronted with a possible shortage of its most important raw material. This contingency, however, was promptly met by a most patriotic action on the part of an American rubber company. The baling of plantation rubber shipments had been successfully demonstrated and was being gradually adopted with great advantage by The B. F. Goodrich Co. With marked generosity this company turned over to The Rubber Association of America, Inc., for the benefit of the whole industry, all the details of this process, including the purchase rights to one hundred steel presses that had been ordered for this specific purpose. The Rubber Association of America, Inc., acted with characteristic promptness and the press equipment was soon on the way to Singapore. Special committees were appointed in the Far East to see that the plan was properly inaugurated and to assist in the consummation of the plan.

Approximately 80 per cent of the rubber shipped from the Far East comprises the superior grades of Crêpe and Smoked sheet rubber. These come from the mill in sheets of standard thickness and width and are packed in wooden cases, the standard size measuring 19 by 19 by 24 inches, which is equivalent to 5 cubic feet. The cases are securely nailed and banded with iron to withstand the long journey and severe handling.

The average net weight of a case of First latex crêpe is 130 pounds, and that of Smoked sheet is 180 pounds, the tare in both cases averaging 25 pounds. Ocean freight rates are charged according to cubic measurement, the ocean freight from Singapore to Pacific ports being \$65 per 40 cubic feet. A ship ton is equivalent to 50 cubic feet, and a case of rubber measures 5 cubic feet; there are, therefore, an average of 10 cases to the ship ton.

According to the new plan a compressed bale of Crêpe or

Sheet rubber will continue to measure 5 cubic feet, and it is confidently expected that with the cooperation of the shippers and the use of the steel press system, 180 pounds of Crêpe and 225 pounds of Smoked sheet will eventually constitute the net contents of each bale. This will result in a saving of 25 per cent in cargo space and about 20 per cent in weight.

A comparison of two overland shipments that were recently made from the Pacific Coast, is particularly enlightening. One carload of 400 cases contained 60,000 net pounds of rubber with 14,000 pounds tare—a total of 74,000 pounds gross. A similar car of 400 bales contained 80,000 net pounds of rubber with 1,200 pounds tare—a total of 81,200 pounds gross. Considering that this rubber shipment was baled by crudely constructed presses it is a safe conclusion that the new steel presses will fulfil every expectation.

One of these presses, the operation of which is extremely simple, is shown in the accompanying illustration. The cover is raised by stepping on the foot-pedal at the side of the machine and the tie-wires and burlap cover are placed within the press. The folded sheets of rubber are then packed into the press. When pressure is removed from the foot-pedal, the cover drops automatically back into place and two swinging arms are moved over the platen which is forced down by a ratchet-pawl and rack movement. The ratchet handle is provided with a



THE LOGEMANN RUBBER BALING PRESS.

slot so that a long bar may be inserted to give greater leverage when necessary; moreover, each press is equipped with wheels and a handle attached to the pivoted front wheel for the purpose of making the press portable.

While baling rubber is to be recommended, it is understood that wooden cases can be used as a covering instead of burlap, provided that the desired economy in space is obtained.

The War Trade Board has asked The Rubber Association to suggest a date when the compressed form of rubber packing will be in use by all shippers with the idea that this particular form of packing will be made a preferred condition in obtaining licenses for importing crude rubber.

Government Specifications for Short and Hip Rubber Boots, Gaiters and Raincoats.

SHORT RUBBER BOOT.¹

1. **STANDARD SAMPLE.**—Each manufacturer shall submit for approval to the Quartermaster Corps two sample pairs of boots representing the design and materials to be used on boots delivered on contract. Upon approval, one of these boots shall be tagged with an approval tag sealed to the boot and immediately returned to the manufacturer before work on the contract is begun.

2. **RUBBER COMPOUND.**—All rubber compounds used in the construction of these boots shall be those in regular use by each manufacturer for the construction of his "extra" or "super quality" goods (so known to the trade). Each manufacturer shall, moreover, submit to the Quartermaster Corps an affidavit that these compounds, or their equivalents, have been used in the production of his "extra" or "super quality" goods for a period of at least two years previous to the contract and that these goods have given satisfactory service.

3. **LASTS.**—All boots furnished under these specifications shall be made over each manufacturer's regular boot trees.

4. **MEASUREMENTS.**—Measurements shall be based on boot size 9.

(1) **HEIGHT.**—The height of boot inside of back shall be not less than fifteen (15) inches. The height of boot inside of front shall be not less than sixteen (16) inches.

(2) **GIRTH.**—The circumference at the calf of the boot tree over which the boots are made shall be not less than sixteen and one-half (16-1/2) inches.

5. **WEIGHT.**—The weight of the boot, finished and ready for shipment shall be not less than 5 pounds per pair, size 9.

6. **FINISH.**—Boots are to be black throughout, dull finish, and not varnished. No colored trademark labels over one and one-half (1-1/2) inches in diameter and not more than one on each boot.

7. **LEG AND TOE LININGS.**—Leg and toe linings shall be made of cotton fabric, weighing not less than thirty-five hundredths (35/100) pound per square yard, frictioned and even motion coated.

8. **LEG FORM.**—Leg forms shall be made of cotton fabric weighing not less than thirty-one hundredths (31/100) pound per square yard, which shall be frictioned on both sides.

9. **VAMP FORMS.**—Vamp forms shall be made of cotton fabric weighing not less than thirty-five hundredths (35/100) pound per square yard, which shall be frictioned on both sides.

10. **INNER VAMP CONSTRUCTION.**—The cotton fabric used for inner vamp shall weigh not less than thirty-five hundredths (35/100) pound per square yard and shall be frictioned on both sides.

The gum inner vamp if used without friction shall be a sheet of rubber compound not less than fifteen thousandths (15/1000) of an inch thick.

Boots shall contain at least one of these inner vamps, may contain both. A rubber toe strip not less than twenty-five thousandths (25/1000) of an inch thick shall be used.

11. **COUNTER FORM.**—Counter forms shall be made of cotton fabric weighing not less than thirty-one hundredths (31/100) pound per square yard, which shall be frictioned on both sides.

12. **FRONT AND BACK STAYS.**—These stays shall be made of cotton fabric weighing not less than thirty-one hundredths (31/100) pound per square yard, which shall be frictioned on both sides. If preferred, a cloth ankle piece of the same friction

fabric may be substituted for the front and back stays. Front stay to extend to top of leg cover.

13. **GUM LEG COVERING.**—The leg cover shall consist of rubber compound not less than twenty-five thousandths (25/1000) of an inch thick.

14. **GUM VAMP.**—The vamp cover shall consist of rubber compound not less than thirty thousandths (30/1000) of an inch thick.

15. **GUM COUNTER.**—Counter cover shall consist of rubber compound not less than twenty-five thousandths (25/1000) of an inch thick.

16. **GUM ANKLE PIECE.**—The gum ankle piece shall consist of a rubber compound not less than fifteen thousandths (15/1000) of an inch thick. It must extend to top of leg cover at front of boot.

17. **GUM BINDING.**—A binding shall be placed around the top of the boot on the outside in order to give a finished appearance.

18. **SMOOTH SOLE.**—The smooth sole shall consist of rubber compound not less than sixty thousandths (60/1000) of an inch thick.

19. **TAP SOLE.**—The rubber tap sole shall be of the design known as "Spading" and shall cover the shank of the boot, and extend completely under heel.

The tap sole shall weigh not less than three-eighths (3/8) pound per pair, size 9.

20. **HEELS.**—The heels shall be not less than five-eighths (5/8) of an inch thick at the thinnest point and shall adhere firmly to the gum sole. If necessary to insure proper adhesion, a heel cover not less than two-hundredths (2/100) of an inch thick may be used between the heel and gum sole.

21. **INSOLE.**—The insole shall be lined with cotton fabric weighing not less than thirty-five hundredths (35/100) pound per square yard, frictioned, backed with rubber compound or fiber stock with coating of rubber compound.

22. **SOLE FORM.**—The sole form shall be made of cotton fabric weighing not less than thirty-one hundredths (31/1000) pound per square yard which shall be frictioned on both sides.

23. **STIFFENING SOLES.**—To give the necessary stiffness to the bottom of the boot, stiffening soles shall be used. The total thickness of such parts, including the stiffening compound on the insole if used, shall be not less than twenty-hundredths (20/100) of an inch.

24. **COUNTER.**—A stiffening counter shall be provided which shall consist of a cotton fabric weighing not less than fifteen hundredths (15/100) pound per square yard, which shall be frictioned and then coated with a stiffening compound. The counter complete shall be not less than six hundredths (6/100) of an inch thick.

25. **PULL-ON.**—Boots are to be fitted with knob pull-ons.

26. **GUM HEEL STAY.**—A gum heel stay made from the same rubber compound as used for the outsole, not less than twenty-five thousandths (25/1000) of an inch in thickness shall be placed between the lining and counter of the boot.

27. Having in mind the difficulty that would arise in factory manipulation if the Quartermaster Corps required a uniform detailed specification from all manufacturers, and in consideration of the Quartermaster Corps accepting goods manufactured under this very broad specification, it is required that each manufacturer shall within thirty days of beginning manufacture make up a statement of detailed material and labor cost for

¹ No. 1320. Adopted April 12, 1918.

each article of rubber footwear on which he receives government orders. This detailed cost shall be figured:

(a) At the actual prices paid for all materials.

(b) At the arbitrary prices of raw materials (at approximate market conditions) furnished by the War Service Committee of the Rubber Industry of the U. S. A., Boot and Shoe Division.

The total of these detailed costs shall show the material and labor costs on a dollar of selling value per pair of merchandise sold to the Government. These costs shall be sworn to by a proper officer of the company, and remain on file at the office of the company. These costs shall be available to the purchasing and inspection chiefs of the Quartermaster General's office in Washington, or to a properly authorized representative. It is understood that to substantiate the correctness of the material and labor costs access shall be given at the office of the company to proof of prices paid for materials, the record of calender runnings, compounds, and all other information necessary to check up the accuracy of the figures. These figures will be corrected from time to time upon request of the Quartermaster Corps.

HIP RUBBER BOOT.²

To be the same as the foregoing specification for short rubber boot, except that the following paragraphs, No. 28 to 34, inclusive, shall be added:

28. TOP OR SKIRT.—The top shall consist of cotton fabric weighing not less than forty-three hundredths (43/100) pound per square yard, frictioned with a good quality of rubber compound, one side of which shall be completely rubber surfaced.

The seam of the top shall be at the back or on the outside of the leg.

29. KNEE PATCH.—There shall be a knee patch of rubber compound, which shall be not less than fifty (50) square inches in area and twenty-thousandths (20/1000) of an inch thick.

30. TOP BUCKLE AND STRAP.—Each boot shall have fastened to the top on the outside of the leg, a boot buckle at least one and one-eighth (1-1/8) inches wide. With each boot shall be furnished an adjustable strap made with a loop at one end, through which may be slipped the belt of the wearer.

When finished this strap shall be not less than ten and one-half (10-1/2) inches long and not less than thirteen-sixteenths (13/16) of an inch wide. It shall consist of cotton fabric, frictioned on both sides and surfaced with rubber compound. The fabric shall be double. The loop at the end of the adjustable strap shall be securely fastened and shall be large enough to permit easy passage of a belt two (2) inches wide. Sample will be furnished by Quartermaster Corps.

31. MEASUREMENTS.—The extreme height of the hip boot inside shall be not less than thirty-four (34) inches.

The crotch height inside shall be not less than twenty-nine (29) inches.

The extreme girth of the boot, measured around the boot inside of the crotch shall be not less than twenty-three (23) inches.

32. PULL-ONS.—Tug straps may be used on hip boots, in place of the knob pull-ons used on the short boot.

33. ANKLE STRAP.—Each boot shall be provided with an ankle strap. This strap shall be not less than 13/16 inch wide, made from a heavy cotton fabric, weighing not less than 11-1/2 ounces per square yard, double frictioned, and surfaced with a good grade rubber compound. The fabric shall be two-ply. A boot buckle not less than 1-1/8 inches wide shall be surely fastened and riveted to one end. The strap shall be not less than 32 inches long for size 9. The strap shall be strong enough to stand any reasonable pull when used for the purpose for which

it is intended. A standard sample shall be furnished by the Quartermaster Corps.

34. ANKLE STRAP GUIDE.—An ankle strap guide made from the same stock as used for the ankle strap shall be securely vulcanized to the outside of the rubber counter at the back of the boot. The opening in this guide shall be lined with a cotton fabric to prevent its adhering during vulcanization. The guide shall be 7/8 inch wide, the opening 1-1/2 inches long, and sufficiently large to allow strap to be adjusted easily. The middle of the ankle strap guide shall be approximately 4 inches from the bottom edge of the heel of boot size 9. A standard sample of this ankle strap guide will be furnished by the Quartermaster Corps.

4-BUCKLE ALL RUBBER GAITER.³

1. STANDARD SAMPLE.—Each manufacturer shall submit for approval to the Quartermaster Corps two sample pairs of gaiters representing the design and materials to be used in shoes delivered on contract. Upon approval, one of these shoes shall be tagged with an approval tag sealed to the shoe and immediately returned to the manufacturer before work on the contract is begun.

2. RUBBER COMPOUND.—All rubber compounds used in the construction of these shoes shall be those in regular use by the manufacturer for the construction of his "extra" or "super quality" goods (so known to the trade). Each manufacturer shall, moreover, submit to the Quartermaster Corps an affidavit that these compounds, or their equivalents, have been used in the production of his "extra" or "super quality" goods for a period of at least two years previous to the contract and that these goods have given satisfactory service.

3. LASTS.—All shoes furnished under these specifications shall be made over what is known as regular broad-toe full-width last used by each manufacturer. Model to be approved by Quartermaster Corps. Shoes must fit over army marching shoe, No. 1269, D width, size for size.

4. HEIGHT.—Average height of gaiter to be not less than ten (10) inches outside at back.

5. WEIGHT.—The average weight of finished gaiter ready for shipment shall not be less than three and five-eighths (3-5/8) pounds per pair, size 9.

6. VAMP AND QUARTERS.—Vamp and quarters shall consist of cotton fabric weighing not less than thirty-five hundredths (35/100) pounds per square yard, which shall be frictioned on both sides.

The outer surface shall be covered with a rubber compound at least three hundredths (3/100) inch in thickness.

The vamp and quarters shall be lined with a cotton fabric not less than thirty-five hundredths (35/100) pound per square yard, frictioned and even motion coated.

7. FINISH.—The gaiter is to be black throughout, dull finish, and not varnished. No colored trade-mark labels over one and one-half (1-1/2) inches in diameter are to be used and not more than one on each shoe.

8. BELLWS OR POCKETS.—The vamp and quarter shall be joined by a bellows or pocket of cotton fabric weighing not less than thirty-five hundredths (35/100) pound per square yard and shall be frictioned on both sides and covered outside with a rubber compound to exclude water.

The pocket shall be lined with a cotton fabric weighing not less than thirty-one hundredths (31/100) pound per square yard.

9. COUNTER.—A stiffening counter shall be provided, which shall consist of a cotton fabric weighing not less than fifteen hundredths (15/100) pound per square yard, which shall be frictioned and then coated with a stiffening compound. The counter complete shall be not less than six hundredths (6/100) inch thick.

² No. 1321. Adopted April 12, 1918.

³ No. 1322. Adopted April 12, 1918.

10. **BACK STAY.**—A suitable back stay shall be provided.

11. **INSOLE.**—The insole shall be not less than one hundred and twenty thousandths (120/1000) of an inch in thickness, made from the same compound as used for the outsole backed on the lasting side with a cotton fabric weighing not less than thirty-one hundredths (31/100) pound per square yard.

12. **SOLE.**—The sole shall be a full double plain edge sole, known to the trade as a "railroad sole," consisting of:

1. A sole form of cotton fabric weighing not less than twenty-five hundredths (25/100) pound per square yard, to be frictioned on both sides.

2. A smooth sole of rubber compound at least six hundredths (6/100) inch in thickness, cut to extend above the lower edge of the upper, when in position.

3. An outsole of rubber compound, thickened at the heel and weighing not less than six-tenths (6/10) pound per pair (size 9).

13. **BUCKLES.**—Each shoe shall be fitted with four buckles securely fastened to the gaiter.

14. Having in mind the difficulty that would arise in factory manipulation if the Quartermaster Corps required a uniform detailed specification from all manufacturers, and in consideration of the Quartermaster Corps accepting goods manufactured under this very broad specification, it is required that each manufacturer shall within thirty days of beginning manufacture make up a statement of detailed material and labor cost for each article of rubber footwear on which he receives government orders. This detailed cost shall be figured:

(a) At the actual prices paid for all materials.

(b) At the arbitrary prices of raw materials (at approximate market conditions) furnished by the War Service Committee of the Rubber Industry of the U. S. A., Boot and Shoe Division.

The total of these detailed costs shall show the material and labor costs on a dollar of selling value per pair of merchandise sold to the Government. These costs shall be sworn to by a proper officer of the company and remain on file at the office of the company. These costs shall be available to the purchasing and inspection chiefs of the Quartermaster General's office in Washington, or to a properly authorized representative. It is understood that to substantiate the correctness of the material and labor costs, access shall be given at the office of the company to proof of prices paid for materials, the record of calender runnings, compounds, and all other information necessary to check up the accuracy of the figures. These figures will be corrected from time to time upon request of the Quartermaster Corps.

RAINCOAT (FOOT).⁴

(a) **CLOTH FOR FACE.**—To count in the grey 64 ends to the inch in the warp and 60 ends to the inch in the filling; to have a warp strength of about 50 pounds to the inch; to have a filling strength of about 45 pounds to the inch; to weigh not less than 3.25 yards to the pound; width not less than 38-1/2 inches.

(b) **CLOTH FOR LINING.**—To count in the grey 64 ends to the inch in the warp and 60 ends to the inch in the filling; to have a warp strength of about 33 pounds to the inch; to have a filling strength of about 20 pounds to the inch; to weigh not less than 5.35 yards to the pound, width not less than 38-1/2 inches.

(c) **DYES.**—To be commercially fast color sulphur dye, olive drab shade, water repellent finish, and the finished cloth not less than 36 inches in width. The strength of the finished fabrics to test within 10 per cent of the grey goods strength. No copper or manganese shall be used in dyeing.

COMPOUND.—To contain not less than 30 per cent of the best Upriver fine Para rubber or fine Ceylon rubber; 6 per cent of

the best light-colored reclaimed rubber of a quality equal to Tacoma or Puritan brand; 3 per cent brown corn oil substitute; 7 per cent mineral rubber; 10 per cent litharge; 12 per cent zinc oxide; 30-1/2 per cent whiting; and 1-1/2 per cent sulphur.

No copper or manganese salts shall be used in the compound.

The amount of compound to be spread on the cloth (each coat reversed) shall be from 5-1/4 to 5-3/4 ounces per square yard, and the minimum number of coatings shall be eight, with at least five of these on one cloth. Fabrics, when doubled, shall be entirely waterproof and thoroughly vulcanized to government standard.

STRAPPING.—All strappings must be coated with not less than three ounces per square yard of the above standard compound and vulcanized. Strappings to be cut bias not less than 1-1/4 inches wide, with exception of the arm scye and strapping covering the stitching on the pocket which is to be cut 1 inch wide.

CEMENT.—25 per cent of fine Upriver Para rubber; 25 per cent of fine Ceylon rubber; 20 per cent litharge; 29 per cent whiting; and 1 per cent rosin. This cement to be well ground, thoroughly mixed and used according to government standard.

OTHER MATERIALS.—Steel japanned clasps and take-ups; ball and socket sleeve fasteners; 24 line tack button; japanned eyelets; sewing cotton olive drab, No. 36.3 or 4 cord, having a tensile strength of not less than six pounds.

COLLAR.—Standing rolling collar, four inches wide, of the same material as the coat; collar to be stitched and cemented; collar stand to be interlined. To have a triangular throat piece stitched to the collar with tack buttons to correspond. To have a loop hanger stitched in seam of stand at back.

POCKET.—To have two slash pockets with hand openings; openings to be about 7-1/2 inches; pockets to measure, inside the stitching, about 13-3/4 by 8-3/4 inches; pockets stitched and strapped; openings to be reinforced by inside facing on the body of the coat, extending beyond the stitching on the pocket opening. Pocket openings to be strongly made and tacked securely at the ends by three rows of stitching at least 3/16 inch apart.

BALL AND SOCKET FASTENERS ON SLEEVES.—To have ball and socket fasteners on each under sleeve (socket to be placed on hem) and all placed and securely stayed as shown in standard sample and marked on standard patterns.

FRONT.—To be made with a storm fly front, stitched on the outside of the coat with two rows of stitching; fly to measure not less than 29 inches in length and four inches wide at the second take-up. The facing to be cemented with a raw edge in such a manner that the cement will form a strapping to cover the stitches in the storm fly; the coat to be fastened with four clasps and take-ups and with one tack button and button hole eight inches from the bottom of the coat.

BACK.—To be made with a double back on the outside about 12-1/2 inches deep from the bottom of the collar stand. The back of the coat to be ventilated by eight 3/4-inch holes, placed as in the standard samples.

SHOULDER STRAP.—Shoulder strap on each shoulder stitched into the shoulder seam, measuring two inches wide at shoulder seam, tapering to 1-3/4 inches, extending to within 1/2 inch of collar stand. This shoulder strap to cover the shoulder seams and to be reinforced on the inside by strapping material, completely cemented, extending from arm seam to collar stand, sufficiently large to cover shoulder stitching.

VENTILATION.—To have four eyelets, 3/8 inch in diameter, under each arm, or a larger number of smaller eyelets to furnish the same ventilation; to be reinforced with a piece of strapping and cemented down.

WORKMANSHIP.—All seams to be sewed (about ten stitches to the inch) and strapped, with the exception of the inside sleeve seam, which shall be sewed and cemented. The bottom of coat to be hemmed 1/2 inch and double stitched. Sleeves 3/4 inch and bottom of double back 1/2 inch to be double stitched—raw edge. The shoulder seam and arm scye to be laid in cement.

⁴No. 1317. Adopted February 20, 1918, in lieu of specifications, No. 1266, which are canceled.

MARKING.—To be stamped with indelible ink (on the coat under fly between the first and second take-ups) name of contractor, date of contract, size, with blank space for the name of inspector.

SCHEDULE OF MEASUREMENTS.

SIZE.	BREAST.	LENGTH.	COLLAR.
Small	38	44	16
Medium	42	46	16½
Large	46	46	17½

All points not covered by these specifications to be like and equal to the standard sample. Each coat to be cut on a pattern furnished by the Government and no deviations from these patterns will be permitted.

THE ARMY SLICKER REMODELED.

An important conference concerning the Army slicker was held in Washington not long ago, with a view to standardizing production. A committee composed of N. Lincoln Greene, C. Kenyon, Jr., and C. T. Hodgman, respectively representing the United States Rubber Co., the C. Kenyon Co., and the Hodgman Rubber Co., all of New York City, was appointed to confer with manufacturers, makers, rubberizers, and converters, in regard to a new type of raincoat, adaptable to oversea service. As a result, a new model was adopted, embodying the best ideas of manufacturers throughout the country. It is of standard construction and material and conforms to the best judgment of army officers in Washington and at cantonments. All slickers which are being manufactured under present contracts are to be changed to the new type, and deliveries will be made promptly.

THE CENSUS REPORT OF THE RUBBER INDUSTRY IN 1914.

A REVISED statement of the rubber industries section of the 1914 census has been received. The present figures differ in many respects from those in the preliminary report published in THE INDIA RUBBER WORLD, April 1, 1916. A brief summary will not, therefore, be inappropriate.

Statements were received from 342 establishments in all, of which 18 manufactured principally rubber belting and hose, 23 produced rubber boots and shoes, while 301 were engaged in making tires, packing, clothing, druggists' and stationers' sundries and other rubber goods.

The total value of the products of the industry increased from \$25,309,648 in 1879 to \$300,993,796 in 1914, or more than elevenfold; the increase for the decade 1904 to 1914 was 103.4 per cent, and for the period 1909 to 1914, 52.5 per cent. The greatest advance for the five years ended with 1914 was noted in that section of the trade devoted to tires, packing and other rubber goods, namely, 74.1 per cent. The boot and shoe divisions experienced the least expansion—8.2 per cent; the output of belting and hose increased 22.5 per cent during the same period.

In addition to the \$300,993,796 reported as the total value of products of the rubber industry in 1914, rubber goods to the amount of \$752,503 were manufactured as subsidiary products by 19 establishments engaged primarily in other industries.

Tires constituted the chief product of the rubber industry, and the 1914 output was valued at \$146,421,569, or 48.6 per cent of the total value of the products of the entire industry.

Rubber boots represented 4.2 per cent of the total value of products, and rubber shoes 12.6 per cent. Massachusetts was the leading state in the output of both rubber boots and rubber shoes, producing 1,850,098 pairs of rubber boots, valued at \$7,027,168, and 22,760,889 pairs of rubber shoes, valued at \$13,486,639.

New Jersey, with a product valued at \$3,207,681, was first in the manufacture of rubber belting, Ohio being second, with \$2,154,696, and Massachusetts third, with \$1,550,705. The same states in the order named led in the value of rubber hose produced, the totals being \$6,066,500, \$4,194,576, and \$2,722,939, re-

spectively. New Jersey reported rubber packing, to the value of \$1,823,568, this amount being more than one-half of the total for the United States. Ohio, with \$851,807, was next in importance in this branch of the rubber industry. In the manufacture of rubber clothing Massachusetts was the leading state, reporting a product valued at \$3,394,807, or nearly one-half of the total value for the United States.

All other manufactures of rubber totaled \$40,133,250, and consisted largely of rubberized fabrics, hard rubber, mechanical rubber, rubber soles and heels, mats and matting, rubber thread and jar rings, each of which was represented by over \$1,000,000.

Druggists' and stationers' sundries were manufactured to a value of \$7,511,755.

The accompanying statistics summarize the articles as follows:

	Quantity.	Value.
Rubber boots	pairs 4,024,486	\$12,647,934
Rubber shoes	pairs 37,211,728	37,858,222
Automobile tires	number 8,021,371	105,678,951
Automobile tubes	number 7,907,351	20,101,084
Motorcycle, cycle and airplane tires	number 3,728,138	6,905,853
Solid tires, all kinds		13,735,681
Belting		7,989,405
Hose		16,853,693
Packing		3,507,651
Waterproof clothing		6,799,515
Druggists' and stationers' sundries		7,511,755
All other manufactures of rubber		40,133,250
Scrap and old rubber (sold and on hand)		1,250,836
Reclaimed rubber (sold and on hand)		11,134,958
All other products		8,885,008
Total		\$300,993,796

The tendency of the industry to become concentrated in large establishments is indicated by the fact that of the 342 concerns reported in 1914, 26 employed 32 persons and reported an individual product totaling less than \$5,000; 52 firms engaged 259 persons and produced from \$5,000 to \$20,000 worth of goods each; 84 with an output varying from \$20,000 to \$100,000, gave work to 1,485 hands; the largest number of firms, belonging to that class producing \$100,000 to \$1,000,000 worth of goods, aggregated 117 and employed 13,965 persons, while the most important group comprised 63 establishments having manufactures worth over \$1,000,000 and a labor force totaling 58,281.

SULPHURIC ACID PRODUCTION.

More sulphuric acid was produced in the United States in 1917 than in any previous year. A moderate estimate shows that the increase in the production of acid of all strengths in 1917 over that in 1916, stated in terms of 60-degree Bé. acid amounted to at least 600,000 tons.

It is not yet possible to state accurately the production of sulphuric acid in 1917 according to strengths, for some of the companies that produce 50-degree, 60-degree and 66-degree acid have reported their entire production together and so stated it as if they had made only 100 per cent acid. Now, 100 per cent sulphuric acid is above 66 degrees Bé. and is here reported as "stronger acid," but, in view of the fact stated, a certain quantity of the stronger acid reported should really be carried as acid having a strength of 66 degrees Bé. or less. However, as no data are available to show the proper distribution of all the acid made in 1917, the following table has been prepared as if the reported production were the actual production:

Strength of acid.	Short tons	
	1917.	1916.
50 degrees	2,306,372	1,829,471
60 degrees	1,187,704	1,119,753
66 degrees	850,006	1,580,109
Stronger acid	1,190,019	443,332

In comparing the production reported for 1917 with that for 1916, only acids of similar strength should be compared. For instance, the amount of acid of 66 degrees Bé. reported for 1917, namely 850,000 tons, is equivalent to 1,290,000 tons of 50-degree acid. In other words, the sum of the amounts of the different acids as given above for 1916 and 1917 should not be compared to show the output in the two years, for the great increase in the output of the stronger acids would represent a much larger increase in that of the weaker acids.

What the Rubber Chemists Are Doing.

ON THE PERMANENT SET OF RUBBER.

O. DE VRIES and H. J. Hellendoorn have made an extended experimental study of the permanent set of rubber and its relation to the state of cure. The following abstract of their paper is from the "Journal of the Society of Chemical Industry" (December 31, 1917).

The authors state that their study of permanent set was undertaken because little is known of its relationship to other mechanical or chemical properties and it is an open question whether the determination of permanent set ought to be included in the routine testing of raw rubber; also because the permanent set being admittedly dependent upon the state of cure of the vulcanized rubber, no definite data have previously been published to reveal the numerical side of this relationship.

Schidrowitz has stressed the fundamental importance of an exact determination of the state of cure in all mechanical tests on vulcanized rubber and of comparing mechanical properties only for the same or for a comparable state of cure. In the present paper, the authors present data bearing on the relationship between permanent set and state of cure, and between the permanent set at a standard state of cure, and other mechanical properties of rubber; especially the "type" after Schidrowitz.

To express the state of cure, the authors use the position of the curve obtained on the Schopper stretching machine, which is expressed by giving the lengths at a load of 1.30 kilos. per square millimeter. This is determined graphically by plotting on millimetric paper the average breaking point of the rings tested, and taking the length at a load of 1.30 kilos. and using the slope of the final parts of the curve, taken directly from the graphs drawn by the testing machine.

For vulcanization, all samples were mixed in the proportion of 92½ parts of rubber and seven and one-half parts of sulphur and vulcanized in steel frames between steel plates at 148 degrees C. for different lengths of time.

For the determination of permanent set, rings of the same dimensions as used on the Schopper stretching machine are stretched to five times their original length over a glass plate with rounded edges. After remaining thus stretched for 24 hours, the rings are taken off and six hours later the length is again determined.

RELATIONSHIP BETWEEN PERMANENT SET AND STATE OF CURE.

From a sufficient lot of homogeneous samples of various types of rubber, the authors determined the permanent set for each in several states of cure. From these tests were obtained curves expressing the state of cure as "Length at a load of 1.30 kilos." From the data of the ordinary types of plantation rubber, so obtained, was calculated the slope of their curves in the neighborhood of 990 per cent and of 1,025 per cent stretch, and the following average values found:

Length at 1.30 Kilos.	Correction in Permanent Set.
1040 per cent.....	- 0.65 mm.
1030	- 0.48
1020	- 0.33
1010	- 0.20
1000	- 0.09
990 .....	.....
980	+ 0.07

For a state of cure expressed by a "length at a load of 1.30 kilos." of 990 per cent, the increase in permanent set is 0.08 for an increase of 10 in "length at 1.30 kilos."; for a state of cure, similarly expressed, for 1,025 per cent the increase of permanent set is 0.15 for an increase of 10 in "length at 1.30 kilos."

For the correction and reduction of permanent set at different states of cure the above table may be used, which gives in the first column the state of cure at which the permanent set was

determined, and in the second the correction to obtain the permanent set at the standard cure (length at a load of 1.30 kilos.=990 per cent).

RELATIONSHIP BETWEEN PERMANENT SET AND "TYPE" AFTER SCHIDROWITZ.

The determinations of permanent set for 15 samples gave values showing a close relationship with the property called "type" by Schidrowitz, which expresses the slope of the stress-strain curve as obtained on the Schopper machine for high elongations and is calculated by means of the formula: (Length at a load of 1.04 kilos., minus length at a load of 0.60 kilos., times 0.4.)

Schidrowitz attaches great importance to this factor in judging the quality of the rubber, a low figure for "type" meaning little stretching by a fixed increase in load and therefore a high quality of rubber.

The authors tabulate their data and curves to demonstrate the relationship of permanent set and "type" and show that this relationship may be regarded as very close, stating their conclusions as follows:

CONCLUSIONS.

The permanent set of vulcanized mixtures of 92½ parts of rubber and seven and one-half parts of sulphur, determined by stretching rings for 24 hours to five times their original length and reading the set after six hours' rest, decreases with advancing state of cure. The data given permit the calculation of the set at any other standard cure from determinations at other states of cure.

The permanent set for the state of cure used by the authors shows a very close relationship with the property called "type" by Schidrowitz, being the slope of the stress-strain curve for high elongations. This relationship takes the form of a curve which for ordinary estate rubbers with a figure for "type" of 34 to 40 may be regarded as a straight line. Only for some special cases of rubber with an abnormal content of serum substances (imitation Para-ball, slab rubber after Eaton, or rubber completely dried as very thick crêpe) marked deviations were found.

As the "type" in ordinary routine testing of raw rubber can be determined in the same operation as tensile strength, a separate test for permanent set, when using the above-named mixture of rubber and sulphur only, is superfluous for ordinary samples. Only in the case of rubber prepared by special methods a deviation from the above-given relationship may occur and lead to valuable conclusions.

VULCANIZATION TESTS.

The fifth interim report of investigations at the Imperial Institute on samples of Plantation Para rubber from Ceylon prepared in connection with the Rubber Research Scheme, is summed up in the following quotation from Bulletin No. 32, Department of Agriculture, Ceylon:

The results of these experiments to determine the effect of dilution of the latex on the vulcanizing and mechanical properties of the rubber are somewhat inconclusive.

The effect of dilution on the rate of cure is not very marked. The samples prepared from undiluted or slightly diluted latex have in each case given good results in the mechanical tests, whereas those prepared from much diluted latex are in some cases distinctly lower.

The results are too irregular to allow of the conclusion that excessive dilution of the latex has a deleterious influence on the qualities of the rubber, although this appears to be so in some cases. In other instances, however, this was not the case, while the diminution effected by dilution in the quantities of mineral constituents, protein, and resin may be of importance. It is desirable that further experiments should be made with a view to clearing up the discrepancies disclosed in this report.

METHODS OF ANALYSIS.

ESTIMATION OF RUBBER AND TEXTILES IN PROOFED FABRICS.

THE following practical methods for the analysis of proofed fabrics as regards both rubber and textiles used in their manufacture are by André Dubosc in "Le Caoutchouc et La Gutta Percha." He says:

It is of the greatest importance to be able to know the real quality of the rubber contained in a proofed fabric, the nature of the fabric, its dressing, and the composition of the mixture applied to make it waterproof.

Such an examination comprises the following parts: the textiles used; determining the fillers of the textiles; determining each textile in particular; analysis of the rubber mixture.

If the proofed material is made up of two thin sheets united by a thin ply of rubber, they may be separated as follows:

A sample of a few square centimeters is dipped into a rubber-swelling liquid, like chloroform or carbon tetrachloride, cold, and allowed to remain in the liquid a few hours. After this, the rubber cement has changed into jelly without cohesion, and it is an easy matter to separate the sheets of fabric.

These are washed several times in cold and in hot alcohol, dried in a dryer and then examined under a microscope.

The fabric is linted, by unraveling and separating the warp threads from those of the weft; each is examined separately, for the warp may be of one textile and the weft of another.

Examined under a microscope magnifying 315 diameters, the different textile fibers present the following characteristics:

COTTON FIBER. Tubes of variable lengths, according to variety, always flat, ribbon-like, thin walled, more or less twisted, often twisted helically.

SILK FIBER. Full fibers of variable size, but of even diameter. They strongly reflect light, which is one of their clearest characteristics.

WOOL FIBER. Hairs of variable size, with epidermic scales, distinctly raised edges forming a network, the mesh of which is very apparent; noticeably equilateral when the parts are viewed face on, and producing on the edges a pronounced lace-like appearance. The longitudinal fibers that are underneath the epidermic coat are generally quite visible; the diameter is rarely uniform.

GOAT HAIR. Variable size but generally greater than wool fibers. The epidermic scales, the sides of which are slightly or not at all raised, present the appearance of a very fine netting, often only slightly visible, with meshes that are long in the transverse direction of the hair. There is very little lace-like effect on the edges. Longitudinal fibers are very visible and of rather even diameter.

FLAX FIBERS. Very long, hollow and slightly pointed at their ends, often lace-like on their edges; their walls are very thick and their inside cavity very small. The diameters are generally very irregular, presenting, as a rule, a series of swellings separated by narrower parts.

It is very easy with a microscope to distinguish between animal fibers, such as silk, wool, goat hair, and vegetable fibers; but, to distinguish between the different sorts of the latter is not so easy, when only microscopic examination is used.

Vegetable fibers can be identified by their color reactions, either by examining them lengthwise, or in transversal sections, following the Vetillard method.

COLOR REACTIONS.

The textile fibers to be examined are plunged for a few minutes into a watery solution saturated with chlorine; they are then placed on a white porcelain plate and a little ammonia poured over them. The following colorings are observed:

Bright red coloring, turning brown in a minute: *Phormium tenax*.

Orange color, growing dark in a minute: hemp.

Light yellow color, darkening in a minute: flax.

No coloration or very slight coloration: cotton.

Violet red coloring: jute, agave, asclepia.

DETERMINING THE FILLING OF FABRICS.

The filling of fabrics may be made up of a dressing having a starch base, a greasy matter, gelatine and soluble and non-soluble mineral matters.

A sample is taken and its surface and weight are carefully determined. This sample is then boiled in a porcelain capsule, together with hydrochloric acid solution, (three per cent) for a half hour. If the fabric has boiled-off much, the boiling process is renewed, then the fabric is washed in pure water, both hot and cold, until completely neutral.

The water from the boilings and washings are put together, as they contain the dressings. The fecula or starch is estimated as glucose by using Fehling's solution on an aliquot part; the gelatine is precipitated by tannin; the mineral matter, soluble as chlorides, is determined by the usual methods.

The waxes have also been melted; they are isolated by ether extraction of the boiled solution. Oils are also thus obtained at the same time.

To know the mineral filling, a given weight of fabric is burned and the percentage of ash determined. After separation of the rubber and the determination of its percentage of ash, this weight deducted from the first percentage of ash obtained, will give the mineral content of the filling of the fabric.

The ash can be analyzed by the usual methods to learn the nature of the different ingredients entering into the filling.

The fabric, freed of its dressing, is dried and weighed. The shrinkage from the original weight shows the percentage of filling, which is usually very high in the case of silks.

Another method of weighting fabric is by dyeing. When this has been done it may be determined by either of two ways:

1. Boil the fabric in oxalic acid, then treat it cold with a dilute solution of sodium carbonate. This method gives good results with vegetable dyes.

2. Treat the fabric with a dilute solution of sodium chloride for ten hours; pass it through slightly acidulated water and then wash it thoroughly. Nearly all aniline colors are destroyed by this treatment.

If the color is not destroyed by the sodium chloride, the fabric is boiled in a weak solution of aldehyde hydrosulphite in the presence of a little glycerin. Very fast colors like paranitraniline red, indigo, naphthol red and even aniline black can thus be removed from the textile.

If the textile contains wool it may be treated with sulphurous acid or hydrogen peroxide.

After decoloring treatment the fabric is carefully washed and rinsed in cold and hot water until perfectly neutral, then dried and weighed.

The most complex case would be one where the fabric contains silk, cotton and wool. In such a case the procedure would be to take from two to five grains of the goods, free it of dressing and dye by the foregoing methods. After washing and drying, its silk content should first be determined.

Silk is completely soluble in neutral zinc chloride, containing an excess of zinc oxide and testing 60 degrees Baumé. This solvent is brought to the boiling point and the sample held in it for one minute. By means of an agitator the sample is removed from the bath and washed first with hydrochloric acid until free of traces of zinc; then with pure water until neutral. The sample is then dried at 212 degrees F. and weighed.

After the removal of the silk the sample is placed in a reflux with 100 c.c. of a two per cent solution of soda and boiled for 30 minutes; any contained wool is thus dissolved. The sample is washed in hot, then in cold water until neutral; dried at 212 degrees F. and weighed.

After these successive treatments, the proofed sample, subjected to analysis, contains only cotton and rubber.

The cotton can be estimated in two ways: by transforming it into cellulose acetate; by dissolving it in ammonium cuprate.

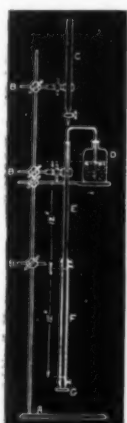
The rubber separated is obtained in the form of one or two very thin sheets, showing surface imprints of the weave of the fabric to which it had adhered.

The analysis of this rubber follows the usual methods, namely: acetone extraction, chloroform extraction and alcoholic potash extraction; determining the contents of free sulphur and combined sulphur, the chlorine (the fabrics being frequently vulcanized by sulphur chloride); by solution in salol, to isolate the compound, or by incinerating an aliquot part to obtain the ash and determine its composition.

Although the method described is long and delicate, one can by its use determine precisely the quantity of dressing, the dye, the quality and quantity of the different textiles, silk, wool and cotton, as well as the percentage of the rubber mixture entering into the composition of a waterproofed fabric.

PENETRATION TEST ON GASOLINE HOSE.¹

An apparatus and method of test has been devised by A. H. Smith, of the United States Bureau of Standards for determining the penetration of gasoline on gasoline hose.



The apparatus is constructed from materials usually found in the laboratory, and its arrangement is shown in the cut. In preparation for a test a 14-inch length of hose *F* is tightly closed at one end by a wired-in glass stopper *G*, and both hose and stopper are shellacked up to the limit of entrance of the stopper. A glass tube *E*, about eight millimeters in diameter and 14 inches long is inserted and wired into the opposite end of the hose and the joint shellacked from the internal end of the tube to and over the end of the hose. This gives an acting length of hose of 12 inches. Hose and tube are clamped to stand *A*, as shown in the illustration. A reference mark is placed on the glass tube 12 inches from its lower end. Gasoline for the test is supplied from bottle *D* by siphon connection. Burette *C* also holds gasoline. The test covers a period of 72 hours.

FIRST FORTY-EIGHT HOURS. The hose and tube are completely filled with the test gasoline, special care being taken that no air bubbles remain in the hose. By means of the siphon, the level of the gasoline is brought to the mark on the glass tube. This maintains a fairly constant level of gasoline for the first 48 hours.

THIRD TWENTY-FOUR HOURS. The siphon is removed and gasoline brought to the mark maintained by additions from the burette at intervals of two to three hours. The average level is held at the mark with fluctuation of not more than two inches. The differences in reading of the burette, before and after each addition, is recorded. Except when gasoline is being added, the glass tube is tightly stoppered.

CALCULATION OF RESULT. The loss per unit area (usually one square foot) is ascertained by dividing the loss of gasoline by the area of the hose. The active length of hose under test being one foot, the calculation of its area is found by multiplying its diameter in inches by the factor 0.262.

The maximum penetration allowable for gasoline hose by United States government specification, under the above test, is 100 cc. per square foot of the internal surface of the hose during the third 24 hours of test.

¹ This test is included in the S. A. E. gasoline hose specifications for types No. 1 and 2 that were published in THE INDIA RUBBER WORLD, February 1 and March 1, 1918.

CHEMICAL PATENTS.

THE UNITED STATES.

GRAVITOMETER.—A co-tangent balance adapted to read direct from a graduated arc, the specific gravity of a liquid determined by the sinker method. (Philip E. Young, Fairhaven, Massachusetts. United States patent No. 1,257,662.)

PLASTIC COMPOSITION.—A plastic composition for repairing pneumatic tubes, consisting of crude rubber, rubber substitute and rosin oil ground together in suitable proportions. (George F. Armstrong, Newark, New Jersey. United States patent No. 1,257,780.)

COMPOSITION OF MATTER.—A composition consisting of a mixture of ground vulcanized rubber and cotton. (Frederick J. Gleason, Walpole, Massachusetts, assignor to Standard Woven Fabric Co., Walpole, Massachusetts. United States patent No. 1,257,698.)

COMPOSITION.—An infusible composition containing a phenolic condensation product in solid solution with a fusible cyclic hydrocarbon of high boiling point. The composition is characterized by the fact that after transformation into its final state particles or fragments of it are capable of being welded into compact and coherent masses under action of heat and pressure. (Leo H. Bakeland, Yonkers, N. Y., assignor to General Bakelite Co., New York City. United States patent No. 1,259,472.)

RUBBER COAGULUM.—The process of treating latex or similar material with a polycyclic member of the benzene series and conserving therewith substantially all of the solid constituents of the latex. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., Broadway and 58th street, New York City. United States patent No. 1,259,793.)

RUBBER COAGULUM.—A mass of rubber coagulum comprising nitrogenous matter, beta-naphthol forming a protective coating over nitrogenous matter and similar material within the mass, and sulphur incorporated. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., Broadway and 58th street, New York City. United States patent No. 1,259,794.)

THE UNITED KINGDOM.

AIRPLANE DOPE.—A solution of acetyl-cellulose or nitro-cellulose or both, with which is mixed a proportion of a suitable colored substance which is soluble in the dope solution and remaining soluble in the dried dope. Specific example "oil amber" added to a butyl acetate solution of nitro-cellulose. (R. Wheatley, 115 Warrender Park road, Edinburgh. British patent No. 112,483.)

THE DOMINION OF CANADA.

TIRE FILLER.—A cylindrical filler for a tire casing is built up of a central felt core surrounded by thick plies of felt with intervening thin plies of composition and encased by a thin skin of composition. The compound layers consist of rubber, glucose and gelatin. The tire filler is molded and vulcanized under pressure. (Raider S. Wicks, Mount Vernon, Washington, U. S. A. Canadian patent No. 181,292.)

TIRE FABRIC.—Layers of fabric joined by a flexible adhesive bond of water, dextrine and castor oil. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Alfred E. Jury, Newark, New Jersey, U. S. A. Canadian patent No. 180,827.)

HOLLAND.

RUBBER FROM LATEX. Latex is thinned by the addition of sufficient alkali, and coagulation is effected by addition of salts and oxides of the alkaline earth metals, magnesium oxide, and similar compounds. (H. Colloseus. Holland patent No. 2,150, September 1, 1917.)

New Machines and Appliances.

FRANCKE FLEXIBLE COUPLINGS.

THE use of flexible couplings on direct-connected machinery is a well-established practice in all modern rubber mill installations. A flexible coupling of the all-metal type is shown



here that possesses features of construction permitting its use in a wide variety of sizes. This is due to the laminated steel pins, each consisting of a bundle of flat steel springs held flexibly

in a radial plane by keepers, one of which allows lateral movement of one end of its pin while the other end is pivoted in its respective keeper. A snap ring that fits an undercut in the back of each flange engages the ends of the keepers and holds them in place.

The driving is performed by the pins in a manner similar to that of bolts of an ordinary rigid coupling, only they are flexible in three directions, thus compensating for misalignment strains that frequently result from the use of rigid couplings. [Smith Serrell Co., Inc., 90 West street, New York.]

A NEW PRESSURE GOVERNOR FOR GAS AND LIQUID SYSTEMS.

In many power installations, where air, other gases, or liquids must be maintained under pressure, the demand for an automatic method of doing this has arisen. As a result a new pressure governor to control standard self-starters for motor-operated pumps and compressors has been developed.

The governor maintains a pressure between predetermined limits on any gas or liquid systems that will not corrode the Bourdon tube, and can be used on any standard a., c., or d. c. circuit. It is rated for pressures of 80, 100, 160, 300 or 500 pounds and operates within settings of from three to twelve pounds between high and low pressures. Governors for higher pressures can be supplied if desired.

The governor consists of a Bourdon tube, an indicating needle, a graduated pressure scale, adjustable high- and low-pressure stops to determine the desired pressure range and a relay which actuates the contacts in the control circuit of the self-starter, all enclosed within a dust-proof case, easily opened for inspection.

Action of the governor is dependent on the Bourdon tube, which should be connected to an independent discharge pipe from the pressure tank. The free end of the tube *T* is mechanically connected to the indicator needle *N*, moving it over the scale as changes of pressure affect the tube. After the settings for the pressure range have been made, the governor will automatically maintain pressure within those limits.

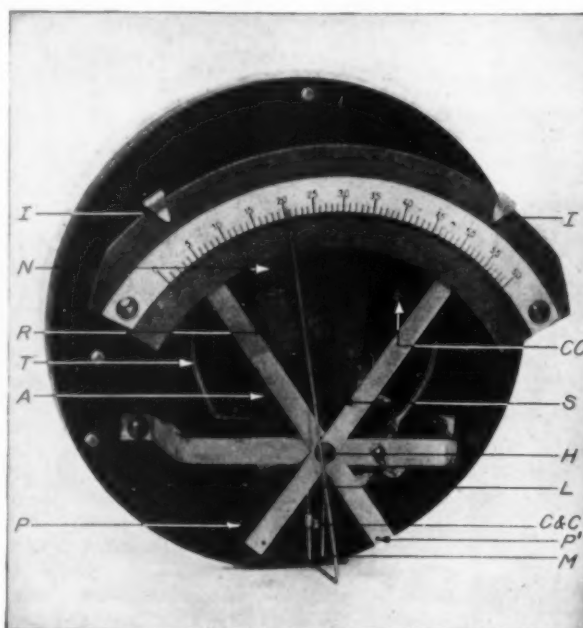
The operation of the pressure governor is as follows:

Assuming that the pressure is at the low value, as indicated by the left-hand indicator *I*, the contact *C* on the needle *N* completes the circuits through the contact *C'* on the movable arm *M*, which at the low pressure point rests against the stop *P'*. When this contact is made, the circuit is completed through the relay coil *R*, causing the armature *A* to close. Attached to this is the contact *CO*, which, upon closing, completes the control circuit to the self-starter, causing the motor to start. The armature is also attached to the spring *S*, which holds the contact *C* firmly against *C* until contact is broken at *P*.

As the pressure increases the needle pointer moves to the

right, but its lower part to which the contact *C* is attached moves to the left, and is followed by the movable arm *M*. When the high pressure point is reached, the movable arm is prevented from traveling further by stop *P*, and the needle continues its course, breaking the circuit by separating contacts *C* and *C'*. The instant the circuit is broken, the relay *R* is deenergized, its armature falls, releasing the tension of the spring *S* and, because the movable arm *M* is counterweighted, it returns to the stop post *P'*.

When the pressure is decreased to the minimum value, the contact *C* again completes the relay coil circuit by engaging contact *C'* and the cycle of operation is repeated.



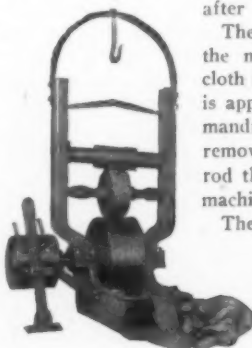
The case is tapped and drilled at the bottom for the pressure pipe and electrical conduit connections. (General Electric Co., Schenectady, New York.)

AKRON-WILLIAMS RAG ROLLER.

This new time-saving device meets the demand from tire factories and large repair shops for greater accuracy and speed in unwinding the wrappings from inner tubes after curing.

The mandrel and tube are placed before the machine, with the loose end of the cloth in contact with roller, and when power is applied and the rag is quickly rolled off mandrel and on to roller. The rag may be removed with ease, after lifting a small rod that engages a hook at the top of the machine.

The roller takes up very little space, and may be installed on a bench or at any convenient place near the machine for wrapping tubes. (The Williams Foundry & Machine Co., Akron, Ohio.)



A VARNISH FOR TOY BALLOON FORMS.



The wooden forms that are used in making toy balloons and other dipped goods require varnishing in order that the finished product may be perfectly smooth and strip freely from the forms.

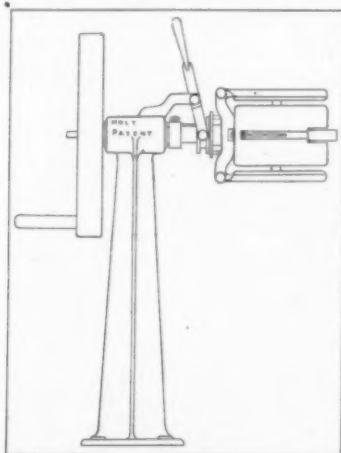
Three types of toy balloon forms which have been coated with a varnish that has proved satisfactory under the peculiar conditions encountered in the dipping process are shown in the accompanying illustration.

The method of treating wooden forms consists of first immersing them for 30 minutes in a solution of the varnish under a vacuum of 24 degrees, after which the vacuum is broken and a pressure of 70 pounds is applied for three hours.

The forms are then removed from the solution, drained and baked over night at 80 degrees C., when they are sandpapered. The forms are next heated to 120 degrees C. after which they are immersed in a mixture of varnish and lacquer and allowed to remain until cold, when they are removed and baked at 80 degrees C. for two hours. The temperature is then raised to 135 degrees C. for one hour longer. The forms are sandpapered between the application of the first and second coats and then given a final buffing. (General Bakelite Co., 2 Rector street, New York.)

THE HOLT CREPE FOLDER.

The object of this machine is to reduce the cost of folding and packing plantation crepe rubber, an operation that is largely performed by hand. It is claimed that 112 feet of crepe can be folded on this machine in three minutes, whereas only 36 feet can be folded in the same time by ordinary hand labor, thereby saving time and wages. Moreover, the machine-folded crepe is more compact, thus reducing the cost of packing and freight.



The machine is simple in operation and may be driven by belt or hand power. One end of the sheet of crepe is attached to one of the pins in the drum and the operator, standing on one side of the machine, guides the crepe on the drum, using both hands. The machine is started and stopped by a hand-lever and the folded rubber is released by pressing in the strap that extends across the end of

the drum. (The Federal Engineering Co., Limited, Kuala Lumpur, or United Engineers, Limited, Singapore, F. M. S.)

K-K SOLING NAILS.



Composition soles are now commonly used in the trade as a substitute for leather. Certain brands of new shoes are supplied with them and the difficulty first encountered in using fiber soles for repairing is now obviated by improved methods of attaching the sole to the shoe.

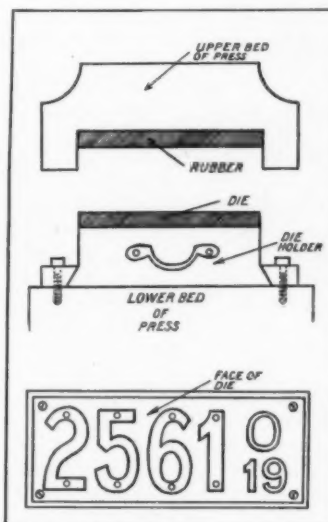
In this connection, the nails that are used in hand-nailing are an important factor in making a permanent repair. The K-K soling nails have been designed to meet the special requirements of composition fiber soling. The nails have specially constructed button heads that lie flat, thus affording a smooth tread. The shanks of the nails are corrugated and terminate in a center stick point with a curl that actually rivets the sole to the shoe. (United Shoe Machinery Corp., Albany Building, Boston, Massachusetts.)

RUBBER DIES FOR STAMPING AUTO LICENSE PLATES.

Auto license plates must be made at the rate of 10,000 or 12,000 pairs a day, and it was found that the use of ordinary male and female dies was a slow and expensive process.

The resilient quality of vulcanized rubber has been utilized in the method here illustrated and described by which license plates may be quickly and cheaply made.

No female die is used and the lower die is made the same as a box die. A raised border is milled about one-eighth of an inch deep, the initial of the state and the year are made solid on the plate, the balance is milled out, the figures that press up the numbers are cut out of soft steel one-eighth of an inch thick and filed up smooth on the edge with a good bevel, holes being drilled in each figure, one on top and one on the



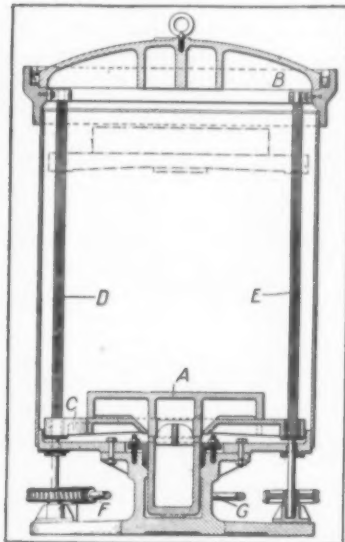
bottom. These holes are arranged so that the figures are interchangeable in the die. Pins are inserted to fit these holes so that when a figure is laid in the die the pins will fit the holes in the letters and are just as high as the letters are thick, so that the pins will come up flush with the face of the figures.

The illustration shows a sectional view of the lower and upper bed plates and a plan of the lower die. The upper bed plate is a hollow square the size of the lower bed plate. A rubber cushion is vulcanized the exact size of this square about five-eighths or three-quarters of an inch thick and this is fastened into the upper bed plate. The lower bed plate with die attached fits this upper bed plate with the rubber so closely that when the press comes down the rubber acts as a female die and strikes up a perfect plate. As the press goes up, the operator slides the lower bed plate out and changes the figure by lifting the numeral off of the face of the die and replacing it with another, each being held in position by the pins in the die; he then slides the lower bed plate under the upper one and strikes another plate. This method is rapid and can be worked on any high power press. ("Stamp Trade News.")

MACHINERY PATENTS.

TIRE PRESS VULCANIZER.

THE object of this invention is to enable the use of a hydraulic ram with a very short stroke. Supposing the ram cap *A* to occupy the position shown in full lines and the space between it and the pressure flanges *B* of the cover to be filled with superposed molds, it is only necessary to impart a very slight vertical movement to the ram piston to apply the requisite pressure to the molds, and therefore the height of the ram can be reduced to a minimum.



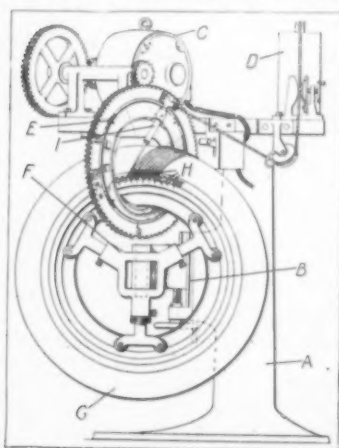
It is necessary, however, that the ram cap shall be capable of being raised to the top of the press tank in loading and unloading the molds. To elevate the ram cap without the use of the ram, a mold carrier *C* is provided, consisting of a plate-like member having an open center and

strengthening ribs, which member engages or projects beneath the edges of the ram cap, so that when the carrier is moved vertically the ram cap will be elevated away from the ram piston.

This is accomplished by four vertical screw rods, only *D* and *E* being shown, having their upper ends journaled in bearings carried at the top of the press tank, and projecting at their lower ends through stuffing boxes in the tank bottom, their lower ends being stepped in bearings, these rods engaging split-threaded bushings secured in openings in the carrier. The projecting portions carry worm-gears which mesh with worms keyed on two parallel shafts *F* and *G* driven by sprocket chains and spur-gearing from a motor. (John C. Lauritzen, Akron, Ohio. United States patent No. 1,256,704.)

TIRE CORDING MACHINE.

A perspective view of the machine is here shown in which *A* is the standard supporting the spider bracket *B*, the back-gear motor *C*, the cord receptacle *D* and the cord-laying mechanism *E*.



The pivoted and vertically adjustable spider head *F* is provided with adjustable radial arms and concave rollers that permit rotation of the tire core *G*. Pivoted in evenly spaced slots around the bead circumference on both sides of the core are spring-controlled cleats *H*, over which the cords are looped.

The cord-laying mechanism consists of an outer-gear ring that is geared to the motor, and revolves around an inner stationary ring,

both being provided with hinged segments for admitting the core. The cord passes from the cord receptacle over a tensioning de-

vice, through the twisting tube *I* and is fastened to one of the cleats.

When the motor is started the outer ring revolves, the cord is laid diagonally across the core and looped over the anchor cleats, the intermittent motion being controlled by fingers attached to the outer ring that reverse the motor, meanwhile the core is advanced by a rib on the ring flange that alternately engages diagonal intersecting grooves milled on the inner periphery of the tire core.

When the first layer is applied, the anchor beads are put in place, the cord cut, the core tilted, and the second layer is applied in an opposite diagonal direction to the first. (Walter Kline, Lake, Ohio. United States patent No. 1,259,997.)

AIR BRAKE HOSE MACHINE.—This invention is an improvement on United States patent No. 1,024,604, issued April 30, 1912, and provides a machine in which the fabric that is wound upon the mandrel, over the tube of rubber thereon, will be drawn outwardly and wound over the enlarged ends of the mandrel without wrinkling. (Samuel J. Sill, assignor of one-half to Herbert H. Hewitt—both of Buffalo, New York. United States patent No. 1,258,820.)

TIRE STRIPPING MACHINE.—The purpose of this invention is to improve upon the type of machine invented by William C. Stevens and patented January 2, 1917, No. 1,211,256. The objects of the present inventions are: to improve the tire-stripping finger; to improve the valve; to make it impossible for one operation to commence until the preceding one has been completed, thus making the machine of the Stevens patent nearly automatic and fool-proof. (Charles W. Steele, assignor to the Firestone Tire & Rubber Co., both of Akron, Ohio. United States patents Nos. 1,258,716 and 1,258,717.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- 1,257,962. Coating machine. E. Armitage, Detroit, Michigan.
- 1,258,185. Slitting and rewinding machine. J. A. Cameron and G. B. Birch, assignors to Cameron Machine Co.—all of Brooklyn, New York.
- 1,258,592. Mold for wheel tires. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Michigan.
- 1,258,644. Rewinding machine. G. B. Birch and J. A. Cameron, assignors to Cameron Machine Co.—all of Brooklyn, New York.
- 1,258,716. Tire stripping machine. C. W. Steele, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,259,834. Slitting and rewinding machine. J. A. Cameron, Brooklyn, and J. A. Hawkes, New York City, assignors to Cameron Machine Co., Brooklyn, New York.
- 1,260,191. Tire tread making machine. G. A. Hagstrom, Kansas City, Missouri.
- 1,260,275. Mandrel for making inner tubes for pneumatic tires. J. A. McTaggart, Philadelphia, Pennsylvania.
- 1,261,017. Machine for trimming circular rubber articles. J. R. Gameter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.
- 1,261,317. Machine for making hollow cord. J. D. Tew, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

THE UNITED KINGDOM.

- 112,565. Crude rubber cutting machine. E. Harvey, 308 Tower Buildings, Water street, Liverpool.
- 113,021. Machine for painting golf balls, etc. C. L. Burdick, 4 Eastern Road, Wood Green, London.

THE FRENCH REPUBLIC.

- 485,394. (May 9, 1917.) Protective devices for machines for working rubber and similar substances. L. Gaisman and S. Dreyfus.

PURCHASE OF HARRISON WORKS BY DU PONT CO.

The paint and varnish business of Harrison Brothers & Co., Philadelphia, Pennsylvania, was acquired by E. I. du Pont de Nemours & Co. during 1917, together with the business of The Beckton Chemical Co., Cauley Clark & Co. and the Bridgeport Wood Finishing Co. The company states that this step rounded out a color and chemical business already begun and represents a valuable line of chemical industry which has already proved very successful.

The Editor's Book Table.

THE BRAZILIANS AND THEIR COUNTRY. BY CLAYTON SEDGWICK Cooper. Frederick A. Stokes Co., New York City. (Cloth, 403 pages, octavo, fully illustrated, including map. \$3.50.)

IN this comprehensive and very readable volume the author gives a vivid and intimate picture of the Brazilian people, their characteristics, their life, and the enormous wealth of their vast country in natural resources. These are not the impressions of a tourist, but the careful deductions of one who has lived many months among the people in all parts of the country.

In his chapter on "Para and the Rubber Workers of the Amazon," the author tells interestingly how rubber is collected, prepared, and marketed. He refers to the almost unlimited quantity of Para rubber trees awaiting only the right conditions of labor and markets to afford an ever-expanding commercial future, yet the Amazon now produces only about 18 per cent of the world's supply of crude rubber. Emphasis is laid upon the greater yield of these virgin trees as compared with the cultivated trees of the Orient, as well as upon the excellent quality of Brazilian rubber, its constant demand, and its high price. To show why foreign capital has not introduced conditions similar to those of eastern plantations, he cites the fate of eight or more European companies which failed through ignorance of the ways of men in these unfrequented regions or by bad management. The life and environment of the *seringueiro*—king of the Brazilian rubber forests, he concludes, determines largely the output of Amazonian rubber, and asserts that Sandmann states the problem concisely when he writes: "To direct the living expenses of the *seringueiro* . . . to direct scientifically unskilled labor."

DYKE'S AUTOMOBILE AND GASOLINE ENGINE ENCYCLOPEDIA. Seventh edition. A. L. Dyke, St. Louis. (Cloth, 6½ by 10 inches, 916 pages, 3,500 illustrations and inserts. Price, \$3.50.)

The 1918 edition of this handbook on the automobile and gas engine is an enlarged and revised edition of that which was reviewed in our March issue. The new departments contain information concerning trucks, tractors, motorcycles, airplanes and airplane engines. The portion devoted to airplanes is illustrated with both working drawings and photographs of different models and gives data as to construction, terms used, and the principles of flight.

HEATON'S ANNUAL, THE COMMERCIAL HANDBOOK OF CANADA and Boards of Trade Register. Heaton's Agency, Toronto, Canada. (Small octavo, 492 pages, cloth. Price, \$1.25. British Edition 5s.)

The name of this hand-book is sufficiently descriptive of its nature and contents. It is a compact volume which contains many general and specific facts concerning our northern neighbor, mainly such facts as are likely to be sought by the business man—the names of the officials of the Dominion, information about post office matters and rates, commercial regulations, transportation, banking, customs decisions and tariffs, descriptions of towns, colonization facts and in general regarding industries, agriculture, mining, climate, education and kindred subjects. While it cannot in this condensed form tell the reader "all about Canada," it gives a remarkable amount of information in such shape as to be quickly found.

HANDBOOK OF AUTOMOBILES, 1918. NATIONAL AUTOMOBILE Chamber of Commerce, Inc., New York City. (Small octavo, 225 pages, illustrated.)

This handbook, the fifteenth annual number, like its predecessors, contains in a most condensed form descriptions and illustrations of the motor cars and trucks made by the members of the National Automobile Chamber of Commerce, Inc., giving photo-engravings of each car or truck with details of construction and equipment, prices, etc., in brief form for easy reference and quick comparison. There is a

list of the officers, directors and committees of the association, definitions of the association's standards for horse-power ratings, standard chassis for gasoline and electric commercial vehicles, etc. At the end of the book are several printed request blanks asking for catalogs, which are time-savers for those owners of the book who wish more complete descriptions of the vehicle listed.

STRIPE CANER, ITS PREVENTION AND CURE. BY H. ASHLANT, A. C. R. S. Milne & Stevens, Ipoh, Perak, F. M. S. (Octavo, paper, 40 pages.)

This readable and important treatise by the mycologist of a progressive rubber estate in Sumatra appeared in "The Malayan Tin and Rubber Journal," and has now been reprinted in pamphlet form for convenient reference. At a time when the control of tree diseases has become one of the greatest problems of the rubber planter this practical work will be especially welcome. The disease, its appearance and mode of infection are described minutely, while preventive measures and curative treatments are detailed exhaustively.

NEW TRADE PUBLICATIONS.

THE AKRON RUBBER MOLD & MACHINE CO., AKRON, OHIO, has published "Catalog D, Tire Repair and Tire Builders' Equipment," a 48-page book showing the many specialties needed in this important branch of the rubber industry. The repair man evidently can equip his establishment fully from the lines pictured and described in this catalog which is a fine sample of plain, direct trade literature.

* * *

C. K. WILLIAMS & Co., EASTON, PENNSYLVANIA, HAVE JUST issued a comprehensive descriptive list of Anchor Brand dry colors they manufacture for paint grinders', paper manufacturers', and rubber manufacturers' use. The book is well arranged, classifying the various pigments according to colors, giving the analysis of each, special uses, and other data, and naming the requirements of the trades mentioned. Some idea of the scope is indicated by the fact that 67 reds are so described, 20 ochres, 12 umbers, 12 siennas, 15 whites, and 8 blacks, besides shorter lists of other colors and ingredients. The book is one which will be found useful in the compounding rooms of rubber factories.

* * *

DRIVER-HARRIS CO., HARRISON, NEW JERSEY, HAS RECENTLY issued an extensive bulletin on the subject of pure sheet nickel. Another bulletin on "Nichrome" wire-mesh containers for heat-treating and acid-cleaning is to follow.

* * *

THE MOTOR TRUCK CLUB OF AMERICA, 1790 BROADWAY, NEW YORK CITY, publishes a neat little 20-page monthly telling of its activities, and giving many items of interest to motor truck builders, and users, and the makers of and dealers in tires and accessories. The March, 1918, number gives an account of the fourth annual dinner of the club, instructions for inspection of trucks, the progress of transportation by trucks to overcome the present freight and express congestion and other matters of interest.

* * *

"AKRON—SUZERAIN OF RUBBER," IS THE TITLE OF A TWO-PAGE illustrated article by Edward Balmer in "Collier's Weekly" of December 29, 1917, that outlines the history and present standing of the rubber trade and Akron's position in the rubber world. Akron is credited with being the only city in the world that has such an absolute control of any commodity of commerce, the figures varying from one-half to two-thirds.

"THE EMPLOYEES' SERVICE DEPARTMENT NEWS" IS THE NAME OF a new monthly publication that has recently made its debut at the Goodrich factories. It tells about the things that are for sale to Goodrich employes only at the factory service store. The "News" will appear as an insert in "The Circle," the factory house organ.

"CLASS" FOR APRIL, 1918, IS A SPECIAL RUBBER PRODUCTS NUMBER, showing by interesting text and many advertisements the effect the war has had in increasing the demand for most staple and war products of rubber. The leading article on "War-Time Efficiency of Business Papers" is by E. C. Tibbitts, advertising manager of The B. F. Goodrich Rubber Co., Akron, Ohio, who states "in these days of war stress, business men, confronted with unusual conditions, are availing themselves of the valuable information presented through the medium of their trade and technical journals as never before."

"HISTORY'S LESSON TO THE MOTOR TRUCK" IS THE SUBJECT OF a new booklet by P. W. Litchfield, vice-president and factory manager of the Goodyear Tire & Rubber Co., Akron, Ohio. This booklet points out the real significance of the motor truck's mission as an agent of transportation, and visualizes a new era in transportation with fleets of motor trucks plying long distances, operating day and night, on a regular schedule.

Mr. Litchfield believes the trend of motor truck tire equipment to be in the direction of pneumatic tires which allow lighter chassis and bodies than those designed for use on solid tires, and permit greater speed and heavier loads with no increased strain or burden on the truck. Only on pneumatic tires, he states, can the truck ever take over the work that it is destined to perform—that of caring for inter-city short hauls—leaving the longer hauls for the railroads.

JUDICIAL DECISIONS.

FOLEY v. HOME RUBBER CO.—Court of Appeals and Errors of New Jersey. October 11, 1917. After a succession of appeals it was finally decided by the Court of Appeals and Errors that Mrs. T. A. Foley was entitled to compensation, under the Workmen's Compensation Law of New Jersey, for the death of her husband who died when the *Lusitania* was sunk, while he was traveling for the Home Rubber Co. (*Atlantic Reporter*, Volume 102, page 1063.)

WILLIAM WRIGLEY, JR., CO. v. COLKER.—District Court, E. D., Kentucky. April 13, 1914. Colker put on the market a spearmint-flavored chewing gum which closely simulated in package design the nationally advertised brand of the plaintiff. The court enjoined the Colker people from using a design which might deceive the public. (*Federal Reporter*, Volume 245, page 907.)

CUSTOMS APPRAISER'S DECISION.

CHEWING GUM—DRAWBACK.—Chewing gum was manufactured by the Scout Gum Co. (Inc.), Rochester, New York, from imported crude or refined gum chicle and refined sugar produced in whole or in part from imported raw sugar.

It was ruled that a manufacturing record shall be kept in the manner described in the sworn statement of the manufacturer, dated March 6, 1918, showing, in the case of each batch of chewing gum manufactured for exportation with benefit of drawback, the lot number and date of manufacture, the quantities and identity of imported chicle and refined sugar used, the quantity of chewing gum obtained, and the quantity of waste resulting; that a sworn abstract from such manufacturing record shall be filed with the drawback entry; and that the quantities of imported chicle and refined sugar taken as a basis for liquidation

shall not exceed the quantities used, as shown by the abstract from the manufacturing record. (Treasury Decisions, Volume 34, No. 15, April 11, 1918.)

ARMY AND NAVY AWARDS.

NAVY SUPPLY AWARD.

THE following awards have been made during the past month for furnishing navy supplies:

EBONITE TUBING.—130,000 feet, \$6,825, A. S. Brock Rubber Co.
HARD RUBBER RODS.—500 pounds, \$285, The B. F. Goodrich Co.
HOSE.—12,000 feet rubber wash deck, \$5,550, Goodyear Tire & Rubber Co., and \$27,000, Quaker City Rubber Co.
RUBBER COMBS.—60,000, \$8,100, American Hard Rubber Co.
SOUNDING BALLOONS.—10,000, \$3,800, United States Rubber Co., and \$1,140, Eagle Rubber Co.

PANAMA CANAL AWARDS.

The following awards have been made during the past month by the general purchasing officer of the Panama Canal:

BICYCLE TIRES.—25, \$50, The B. F. Goodrich Co.; 100, red rubber, \$147, The Fisk Rubber Co.
INNER TUBES.—75, butt end, \$147, Goodyear Tire & Rubber Co.; 25, endless, \$12, Pennsylvania Rubber Co.
MOTORCYCLE TIRES.—50, \$546, Goodyear Tire & Rubber Co.

ARMY MEDICAL SUPPLIES.

The following awards have been made during the past month by the surgeon general of the Army:

AUTOMOBILE TIRES.—24, \$785.52, Goodyear Tire & Rubber Co., Louisville, Kentucky.

BLACK ELASTIC TAPE.—6,945 gross yards $\frac{7}{8}$ inch, \$100,008, American Mills Co., Waterbury, Connecticut; 2,000,000 linear yards, $\frac{7}{8}$ inch, \$190,000, Ever-lastic, Inc.

FLEXIBLE HOSE.—20,000 feet, \$100,000, Mayflower Rubber Works Co., South Braintree, Massachusetts.

GAS MASK PARTS.—1,000,000 check valves, \$5,500, The B. F. Goodrich Co., Akron, Ohio. 200,000 mouthpieces, \$9,200, Mayflower Rubber Works Co., South Braintree, Massachusetts. 250,000 rubber nose pads, \$4,450, United States Rubber Co., New York City. 200,000 feet flexible hose, \$100,000, Pennsylvania Rubber Co., Jeannette, Pennsylvania. 525,000 linear yards fabric, 4.5 cents per yard plus 50 cents roll and 5 cents per square foot for packing cases; 750,000 yards do., 4.5 cents, plus 50 cents roll and 5 cents per square foot for packing cases, Sayles Finishing Plants, Saylesville, Rhode Island.

INNER TUBES.—24, \$109.44, Goodyear Tire & Rubber Co., Louisville, Kentucky.

RUBBER.—450 pounds red vulcanite, \$835, Claudius Ash Sons Co., Limited, New York City.

RUBBER GLOVES.—5,000 pairs surgeons', \$4.48 per dozen pairs, Faultless Rubber Co., Ashland, Ohio. 1,812 pairs, \$477.16, 1,428 pairs surgeons', \$404.60; total, \$881.76, Faultless Rubber Co., Ashland, Ohio.

RUBBER SHEETING.—2,000 yards, 54 inches wide, \$1,380, Hodgman Rubber Co., Tuckahoe, New York.

RUBBER TUBING.—7,000 yards pure gum, \$881.76, 1,000 yards, \$234, Faultless Rubber Co., Ashland, Ohio.

GENERAL ENGINEER DEPOT AWARDS.

The following awards have been made by the purchasing office, general engineer depot, United States Army, Washington, District of Columbia:

RUBBER BLANKETS.—1,000, \$1.10, Boston Woven Hose & Rubber Co.

RUBBER RINGS FOR GAGE GLASS PACKING.—600, 3.45c, The B. F. Goodrich Co.

A country worth fighting for is a country worth saving for. Buy Thrift Stamps.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(399.) Inquiries have been received for machines used in cutting to length rubber rods that are made on a tubing machine; a machine for cutting sheets of uncured rubber; a machine for inserting tubular rivets in tire treads.

(400.) A manufacturer requests the name of a maker of steel roll side plates for rebuilding automobile tires in connection with air bags.

(401.) A subscriber wishes information giving the location of an American manufacturer of latex cups.

(402.) A manufacturer asks for the name of some concern that manufactures a hand-power machine for cutting gaskets up to 20 inches in diameter.

(403.) A reader inquires for data on the cost of manufacturing pneumatic tires and inner tubes, approximately 34 by 4 inches.

(404.) A manufacturing concern has requested the addresses of companies making gutta percha rod.

(405.) A correspondent requests the address of some concern that can supply wood pulp.

(406.) A manufacturing concern inquires where it can obtain belt-driven hose wire-winding machines.

(407.) A reader asks for the names of manufacturers of hard rubber suitable for making photographic developing trays.

(408.) A rubber manufacturer requests the address of some concern manufacturing machinery for cutting rubber bands.

(409.) A correspondent inquires for addresses of makers of non-skid tread bands.

(410.) A buyer is in the market for Quinoline.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative offices. Request for each should be on a separate sheet, and state number.

(26,678.) A man in Switzerland wishes to secure an agency for the sale of rubber heels.

(26,706.) An automobile association in the British West Indies desires to purchase for its members, tires and tubes, and to select a suitable make from some manufacturer in the United States not already represented in that district.

(26,715.) A man in England wishes to secure an agency for the sale of stationery, including erasers.

(26,760.) A man in the United States who is acting as the representative of a firm in France, desires to secure an agency for department-store specialties, notions, and rubbers.

CALENDARS.

An artistic panel calendar has been received from Tyson Brothers, Inc., Carteret, New Jersey, manufacturers of rubber substitutes and chemicals. Above the calendar pad is a hand-painted water color after the original by Frederick Duncan, entitled "Apple Blossom Time."

A calendar of striking design has been received from the Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada. Above the large, easily read figures of the calendar itself is a representation of five of the tires manufactured by the company, one lying flat and the others on edge, while in front the company's trade-mark beaver is waving a paw. Maple leaves are appropriately scattered over the background.

The Perfection Rubber Co., Cleveland, Ohio, has increased its capital stock from \$50,000 to \$75,000.

INTERESTING LETTERS FROM OUR READERS.

THE SOURCE OF LIQUID AMBAR.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—If inquiry No. 377, that appeared in THE INDIA RUBBER WORLD March 1, 1918, has not been answered, the following information may be of interest:

Liquid ambar (false storax) is the exudation of the liquid ambar *Styraciflua* (red gum tree), a common tree in Southern forests, now used extensively as a source of hardwood finishing lumber. The gum, which is viscous, dark-amber colored and aromatic, is highly regarded by Mexicans as an antiseptic ingredient in ointments, incense, etc.

I have advocated its use as a substitute for the "Balsam of Peru" in the manufacture of chewing gum.

I doubt if it can be obtained in large and definite quantities. Parties engaged in handling the Southern herb trade may be able to give further information. In 1910 I was interested in the matter and suggested extraction from the bark, sawdust and sawmill waste of the red gum tree. This is an important line of investigation.

Respectfully,

CHARLES P. FOX.

Cleveland, Ohio.

MORE ABOUT VALUATION OF RECLAIMED RUBBER.

Attention has been called to an error in the article on the valuation of reclaimed rubber that appeared in THE INDIA RUBBER WORLD, April 1, 1918, concerning which the author has written the following correction:

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Yours of April 25 at hand, and in reply I would say that the solution in question is in error as volume is not properly considered. Please correct as follows. The formula given is applicable to all problems of this type, and I attach derivation of same to eliminate any possibility of error.

Type Problem is, "What per cent by weight of two substances of respective gravities (1.20 and 1.60) is a compound of specific gravity 1.38 composed of?"

This is solved by using the following general formula:

$$N = \frac{C - B}{A - B} \times \frac{A}{C}$$

Where N = Per cent by weight of Ingredient No. 1.
A = Specific Gravity of Ingredient No. 1.
B = Specific Gravity of Ingredient No. 2.
C = Specific Gravity of Compound.

SOLUTION:

$$N = \frac{1.38 - 1.60}{1.20 - 1.60} \times \frac{1.20}{1.38} = 55 \times .869 = 47.8 \text{ per cent.}$$

$$N = 47.8 \text{ per cent Ingredient No. 1.}$$

$$(100 - 47.8) = 52.2 \text{ per cent Ingredient No. 2.}$$

DERIVATION OF FORMULA.

Let A = Specific Gravity of Ingredient No. 1.
Let B = Specific Gravity of Ingredient No. 2.
Let C = Specific Gravity of Compound.
Let X = Volume percentage of Ingredient No. 1.
Let Y = Volume percentage of Ingredient No. 2.
Let N = percentage by weight of Ingredient No. 1.

$$\begin{aligned} 1) X + Y &= 1. \\ 2) AX + BY &= C. \\ \therefore Y &= 1 - X. \\ AX + B(1 - X) &= C \text{ (substituting value of Y in [2])}. \\ AX + B - BX &= C. \\ AX - BX &= C - B. \\ X(A - B) &= C - B. \end{aligned}$$

$$X = \frac{C - B}{A - B} = \text{percentage by volume of Ingredient No. 1.}$$

$$N = \frac{C - B}{A - B} \times \frac{A}{C} = \text{percentage by weight of Ingredient No. 1.}$$

$$(100 - N) = \text{percentage by weight of Ingredient No. 2.}$$

Yours very truly,

THOMAS F. CAREY, B. Sc.

New Goods and Specialties.

USEFUL PERSONAL EQUIPMENT FOR THE SOLDIER.

THE equipment of the soldier in the most efficient manner, whether he be officer or private, is receiving adequate attention from manufacturers of all kinds of fittings. Many of the articles devised contain rubber in one form or another and some of these which are waterproofed by other means than rubberizing offer suggestions to rubber manufacturers. The officer's coat shown here, called the "A-R" trench raincoat, is an example. It is made of waterproofed gabardine, olive-drab in color, with an inner lining of chemically-treated oiled fabric. The lining proper is of heavy worsted and there is an additional detachable wool lining the color of camel's hair.

This removable lining is a feature of most service coats, and outer garments of this type are recommended in the government list of articles which should be included in the equipment of officers for field service in France. (L. Adler Bros. & Co., Rochester, New York.)

The objects presented in the central illustration, besides others equally useful to soldiers but which could not be covered in this article, either because they do not contain rubber or because of lack of space, are furnished by the Rogers Peet Co., 842 Broadway, New York City.

Slightly varying styles of money-belts are shown in most outfitting stores, some of which have already been illustrated in THE INDIA RUBBER WORLD. The one at the top of the group here is made of soft suede leather of fine quality and fastens around the body with a buckle and a strap of satinized webbing. The belt contains three pockets lined with black rubber, each of which has a flap which closes over the pocket with snap fasteners, thus providing a secure receptacle for money, photographs, keepsakes, or valuable papers.

The officer's field writing-desk is made of light, strong wood, covered with khaki. A rubberized khaki bag protects it from the weather and is sufficiently large to hold other small articles besides the writing-desk before the silk cord which closes the opening is drawn up. The desk has compartments of different sizes to accommodate large and small envelopes and stationery, pens and pencils, and cards or stamps; the smaller compartments have covers to retain the contents in place when traveling. There is also a thin, smooth, veneered board in the natural wood, which fits snugly into the desk with the stationery and provides a suitable surface on which to write when a table is not available. The cover of the desk, hinged to one end, has leather corners inside, into which are slipped blotters that can easily be changed when required. In closing, the cover is held at the free end by a leather tab with a snap fastener, which makes the whole secure and prevents the articles within from slipping out of place too much.



Soldiers who smoke and are always trying out new accessories, will appreciate the tobacco pouch and cigarette case shown. The pouch is made of khaki-colored fabric, rubber-lined, and has pockets on the outside for the pipe and matches; one is deep enough to contain an ordinary pipe, as it runs to the bottom of the bag, while the other for matches goes only half way down, thus preventing the match-box from slipping beyond easy reach. The bag draws up with a silk cord. The cigarette case is made of rubberized khaki and comprises two pockets to accommodate two packs of cigarettes. One pocket folds endwise over the other and there is a flap at the top which fastens down over both with a snap and holds the whole together.



A GROUP OF ACCESSORIES.

A new style of trench mirror is seen here, the "Reflecto," on which a patent is pending. It is made of a rust-proof metal with a highly polished surface, and is of a rounded oval shape with a small extension, not unlike a handle, at one end, through which is a perforation for hanging it up. The "mirror" comes in a rubberized, fleece-lined khaki cover in which it is confined by a snap fastener.

There are different styles of collapsible hand-basins for campers and soldiers, some of which have already been described in earlier issues of THE INDIA RUBBER WORLD. The one shown folded here is made of rubberized khaki and fits a small case, the flap of which is caught with a snap. The particular feature of this basin is a pocket on the inside, in which the soap may be conveniently kept when the basin is not in use, thereby insuring its safety.

Clothes pins in ordinary times seem a far cry from the needs of men, but a considerable demand now exists among soldiers, the dealers say, for the small, rubberized cases like that in the picture, containing a number of spring clothes pins. The case, which is finished with a snap fastening, takes up little room, and the pins are doubtless useful to any soldier in camp, for



A COMFORTABLE BED FOR THE SOLDIER.

hanging up small articles to dry, from his khaki handkerchiefs to his home-knit socks.

An English concern has patented a bed for the soldier in

camp, in the shape of an air-mattress, which can be folded up and carried in small space when deflated. It is made of substantial fabric intended to withstand hard usage and contains an inner casing of rubber which is filled with air by means of two valves when the bed is to be used. The time required for inflation is about two minutes. The width of the bed proper is twenty-three inches, but extensions at the sides of the lower part are each an additional seven inches in width to afford

greater comfort for the knees of the sleeper.

This arrangement permits a narrower principal part of the bed than otherwise would be practical. If the inner casing becomes torn or punctured, it can be repaired like an automobile tire. (J. C. Cording & Co., Limited, patentees, 19 Picadilly, London, W. 1, England.)



GAS MASKS FOR FUMES.

In these days when gas masks are an essential part of the equipment of the soldier in France, the workers at home in industries where dust and acids are encountered are no less carefully considered by manufacturers.

The "Pulmosan" face mask comfortably combines in one device protection against dust or acid fumes and the necessary provision for proper respiration and adequate sight. It is made of light sheet metal, nickel-plated, beneath which is a rubber face-cushion, inflatable to fit the face of the wearer. In order to give proper vision, the lenses are made large and are carefully ground from optical glass so that continued use will not cause eye-strain. Colored lenses may be ordered specially. A lateral fin, edged with soft rubber and cut out to hug the nose, prevents the lenses from becoming filmed from breathing. Exhaled air escapes through an automatic valve which is so constructed as to insure it against easily getting out of order. The mouthpiece contains a fine sponge which is always used moist. It may be saturated with a neutralizing agent when employed as a protection against fumes. The mask can be taken apart for cleaning and is entirely sanitary. Parts worn through long usage may be replaced. To protect the entire head for any special work, a cape or hood made of pure rubber sheeting may be obtained to wear in conjunction with this mask. (Multi-Metal Separating Screen Co., 247 West 19th street, New York City.)



AUTO FOOT-SCRAPER.

A patent has been applied for on the "Always Ready" foot-scraper intended to project from the running-board of an automobile or door-step and remove mud and slush by

means of a rubber squeegee with vertical projections at the ends. The scraper is hinged to permit folding up out of the way. Those who appreciate a clean car and a clean house will be glad

to learn about this new development of an old-fashioned device. (Always Ready Manufacturing Co., 159 North Jefferson street, Chicago, Illinois.)



THE "V-E-M" NOSE-SPRAYING DEVICE.

A patented device for spraying the nose employs both hard and soft rubber in its manufacture. It consists of a hard rubber nosepiece with a threaded branch to which is screwed the metal tube of ointment used, and another branch over which is fitted a soft rubber bulb shaped like an ordinary nipple. Formerly, a small nipple was used for this bulb, but now a nipple-shaped bulb is made for the purpose. This bulb provides sufficient air-force to send a small amount of the ointment a distance of several feet when not in position in the nose and, consequently, is much more efficient in actual use than many other spraying devices. (Schoonmaker Laboratories, Inc., 70 East 42d street, New York City.)



SEASON-ABLE BATHING CAPS.

Two caps and a hat for the beach and bathing, all made of soft rubber sheeting, are shown here. The "Aviator" is a new development of that style, known as No. 21, and has a cape extension to be tied up over the head when out of the water. The "Quaker Bonnet," No. 107, ties

with long strings under the chin, producing a demure, piquant effect, and the beach hat, shirred and gathered, No. 106, follows the lines of the summer shade hat. These all come in different colors with harmonizing trimmings. (The Faultless Rubber Co., Ashland, O.)



A FLOOR SCRUBBER.

A machine combining soap powder and water sprinklers, scrubbing brush, water absorber, and automatic reel for winding electric cable, all running on rubber-covered

wheels, and with rubber bumpers in front, is the latest help for scrubbing floors. A V-shaped rubber squeegee drives the water in front of the machine after the brushes have utilized it, and a suction pump forces it into a metal can carried on the framework. The automatic reel is not shown here, but fits into the space over that occupied by the coil of electric cable in the illustration. This model has four brushes and a water and soap capacity of five gallons and 2½ pounds, respectively. (Finola Manufacturing Co., Hannibal, Missouri.)



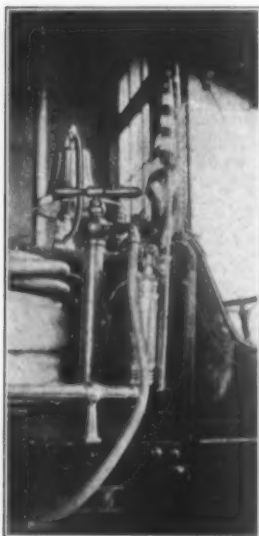
PATENTED "AUTOPAD" DATER.

A rubber dating stamp is shown below, which is combined with a ratchet wheel and cam mechanism above the inking pad which shifts the pad forward and backward as the stamp is operated, thus utilizing all parts of the inked surface. The pad is three inches wide. The framework is nickel-plated and the figures are of the customary rubber band type. There is a locking device on one side of the framework, which permits changing the date easily. (Carleton Coupling Co., Camden, Maine.)



TWIN TIRE NON-SKID DEVICE.

The "Brook" non-skid chain for twin tires is composed of malleable-iron shoes so shaped as to conform to the contour of the twin tires with which they are used. The shoes are joined by steel links, fastened in place by suitable screws, conveniently adjusted in a small amount of time by any person of little experience. Each shoe works independently and permits the chain to creep around the tire, thereby minimizing the damage to the tire on roads covered with mud, grease, snow, or rough stone. It can be put on easily with an ordinary screwdriver, without jacking up a car. (Brown Brothers, Limited, 22 Great Eastern street, London, E. C. 2, England.)



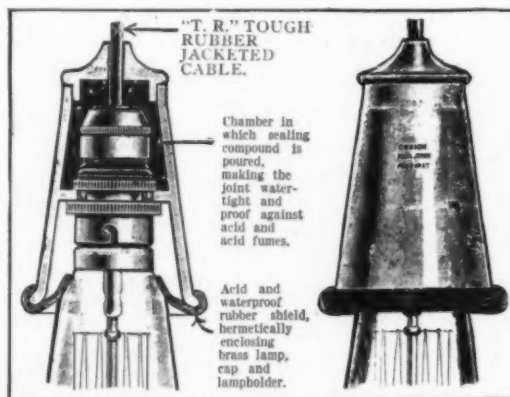
GASOLINE SUPPLY HOSE.

A fifty-foot rubber hose is used by the Los Angeles, California, Fire Department in supplying gasoline from an auxiliary gasoline tank to gasoline-pumping engines when the latter are working near a steam-pumping fire engine. There is great danger in supplying gasoline engines with fuel from an open bucket, on account of the danger that sparks from the engine may ignite the gasoline; but by means of this hose and a hand-pump, gasoline can be supplied with perfect safety. The hand-pump is attached to the auxiliary gasoline tank which is carried on a special truck, and the gasoline is pumped from the auxiliary tank through this rubber hose. The photograph shows the

hose connected to the hand-pump. (Charles W. Geiger, 721 South Hope street, Los Angeles, California.)

ACID AND WATERPROOF LAMPHOLDER, WITH RUBBER SHIELD.

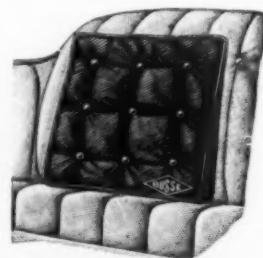
A holder designed specially to meet the requirements for resisting acid and damp is called the "Sampson" and appears in the accompanying illustration. The shell is of a strong vitreous acid-resisting porcelain, fitted with an acidproof rubber shield. The top of the porcelain holder fits on loosely after wiring so that the top chamber of the interior may be filled with paraffin or some other sealing compound, after which the cap is dropped



lack into position. The interior lampholder is locked in position in the shell by means of two shade rings, the upper one having projecting claws which fit into a slot in the porcelain and prevent the holder from turning around. The holder is arranged to take standard tough rubber-jacketed flexible cord. Ease in wiring, reliability, and effectiveness are the features of this device. It is particularly useful in dye works, chemical works, steam sheds, and exposed or corrosive positions. (Ward & Goldstone, Salford, Manchester, England.)

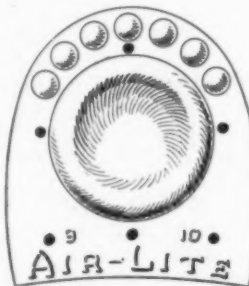
A TAPERED AUTOMOBILE CUSHION.

With an eye to the comfort of the automobile driver as well as of the passengers, a manufacturer of upholstered cushions for the chair trade is now offering a specialty for the automobile. It is of black artificial leather on the front and sides and of durable black cloth on the back. The padding is soft and resilient. All the edges are corded. The cushion tapers from a thickness of 4½ inches at the bottom, where it rests on the automobile seat, to that of ¼-inch at the top. (W. A. Busse and Co., 2700 West Lake street, Chicago, Illinois.)



THE AIR-LITE RUBBER HEEL.

Of modifications of the rubber heel there is no end. The illustration here shows what the manufacturer calls the "Air-Lite" non-skid pneumatic rubber heel. Each step the wearer takes makes a temporary vacuum under the heel, thereby preventing slipping on wet or greasy walks. (Air-Lite Rubber Manufacturing Co., Inc., 110 West 40th street, New York City.)



The Obituary Record.

PROMINENT IN AIRBRAKE MANUFACTURE.

RUFUS FRANKLIN EMERY, aged 48, secretary and treasurer of the Westinghouse Airbrake Co., and an officer and director of several other important corporations, died suddenly Thursday afternoon, April 11, having been stricken with



RUFUS FRANKLIN EMERY.

heart failure while seated at his desk in his office at the Airbrake works in Wilmerding, Pennsylvania.

Mr. Emery was an elder in the Edgewood Presbyterian Church, and formerly had been for some years superintendent of its Sunday school. He was a member of the Edgewood Borough Council at the time of his death, and also of the Duquesne Club, the Edgewood Club, the George W. Guthrie Lodge, F. & A. M.; the Westinghouse Airbrake Veterans' Association and the Crescent Canoe Club of Oakmont.

He was assistant secretary of the American Brake Co., assistant secretary and a director of the National Brake & Electric Co., a director of the Vulcan Crucible Steel Co., secretary and treasurer and a director of the Westinghouse Friction Draft Gear Co., and treasurer and a director of the Westinghouse Traction Brake Co.

Born near Boston, Massachusetts, Mr. Emery came to the Pittsburgh district in 1891 and became affiliated with the great Westinghouse interests, in whose upbuilding he played an important part. He was a public-spirited citizen and took an active interest in various religious, social, civic and patriotic movements, having been especially active in promoting the sale of the Third Liberty Loan bonds.

Mr. Emery leaves a widow, one son and a daughter.

AN OLD-SCHOOL RUBBER GOODS DEALER.

Benjamin C. Tillinghast, founder and proprietor of an extensive jobbing and retail rubber business in Philadelphia, Pennsylvania, and Baltimore, Maryland, died at his residence in the former city in March, aged 68.

He was born in Dedham, Massachusetts, February 14, 1850, and educated in the schools of that town. In 1867 he received an appointment to the Naval Academy at Annapolis. Four years later, while on a practice cruise, he contracted smallpox at

Santiago and was invalided to Philadelphia, where his mother resided. Recovering his health, he became clerk for Richard Levick, a rubber goods dealer in that city.

In 1876 he opened a store in Philadelphia, which was soon found too small, as was also that to which he removed, and this



COLONEL GEORGE POPE

second one was doubled in size, while two additional stores were opened in other sections of the city. He also operated a rubber clothing factory at Frankford, Pennsylvania. Twenty years ago he established a store in Baltimore. Mr. Tillinghast was a man of strict integrity in his business dealings, and was highly respected by his many friends in the rubber business, and by his employees. The seven men who were pall-bearers at his funeral were those longest in his employ, their aggregate record of service being 188 years.

As an illustration of Mr. Tillinghast's character, it is related that at the time of the great fire which destroyed nearly the entire business section of Baltimore, he threw open the doors of his store to the city's firemen, supplying them with coats, boots, and other essentials, refusing later to accept any profit from the city government.

A PIONEER USER OF BICYCLE TIRES.

Colonel George Pope, one of the pioneers of the bicycle industry and for several years president of the National Association of Manufacturers, died April 19 at his home in Hartford, Connecticut, in his 75th year. For many years he was connected with the enterprises of his cousin, the late Colonel Albert A. Pope, being president of the Hartford Cycle Co., a branch of the Pope Bicycle Co., as far back as 1890. When the bicycle interests of the country were merged into the American Bicycle Co. he was chosen vice-president, and in 1903 he became treasurer of the reorganized Pope Manufacturing Co.

Colonel Pope was therefore identified with the pioneer concern to use rubber tires on bicycles. He was prominent in automobile circles, and much of the success of the automobile shows is credited to him. He had been doing important work in the present national war crisis, placing the services of the National Association of Manufacturers at the call of the President and the Council of National Defense at the outbreak of



BENJAMIN C. TILLINGHAST.

the war with Germany. At this time, he also instituted an investigation having for its object the restoring to usefulness of soldiers and sailors injured in the present conflict.

Colonel Pope is survived by a brother living in Boston, a daughter, Mrs. Charles H. Gillette, of Hartford, and five grandchildren.

LONG WITH ONE COMPANY.

Benjamin R. Dillon, secretary and acting treasurer of the Davol Rubber Co., Providence, Rhode Island, died at his residence in that city March 30, 1918, at the age of sixty years.

Mr. Dillon suffered a shock seven years ago, and never fully recovered from its effects. He was forced to resign his office more than a year ago because of failing health.

He was born in Providence, was educated in the public schools there, and after graduation took a course at the Bryant & Stratton Business College. He entered the employ of the American Enamel Co. in his native city, resigning in the early '80's to take a clerical position with the Davol Rubber Co. at the time of its incorporation. Steadily rising, he became secretary of the corporation, and later assumed the additional duties of acting treasurer, both of which officers he held at the time of his death. He is survived by his widow.



BENJAMIN R. DILLON.

TREASURER OF THE GRYPHON RUBBER & TIRE CORP.

Samuel A. Cunningham, president of the Bankers' Safe Deposit Co., New York City, died early in April at a private sanitarium in West Sixty-sixth street, following an operation for intestinal trouble. His health had been impaired for some time but his malady was not considered serious until about ten days previous to his death, when he was advised by his physician to undergo an operation.

Mr. Cunningham, whose ancestors helped with Daniel Boone to conquer the wildernesses of Kentucky, was born in Madison, Indiana, fifty-eight years ago. He attended the private schools in Madison, a military academy at Chester, Pennsylvania, and Heidelberg University. One of his ancestors was Nancy Hanks, mother of Abraham Lincoln. As a young man he engaged in the banking business in his native town, coming to New York little more than twenty years ago as the confidential representative of George F. Baker, whose niece he married. In 1899 he was made secretary of the Bankers' Safe Deposit Co., and in 1908 became its president.

He was president and director of the Fulton Light, Heat and Power Co., treasurer and director of the Gryphon Rubber and Tire Corp., treasurer of the Norman Garage and Sales Co., vice-president of the Wyoming United Oil Co., and was heavily interested in the New Jersey General Security Co.

Mr. Cunningham's hobby was the laying out of golf links. He was chairman of the greens committee and a member of the executive board of the Englewood Country Club, and for sev-

eral years was chairman of the greens committee of the St. Andrews Golf Club. He was also a member of the Lotos Club. In his younger days Mr. Cunningham owned one of the largest orange groves in Florida.

His widow and a daughter, Mrs. Charles Bowes, of New York City, survive him.

WELL-KNOWN IN RUBBER TRADE CIRCLES.

Frank Hopewell, one of the founders and a director of the Reading Rubber Manufacturing Co., Reading, Massachusetts, died at Pasadena, California, April 25, 1918, aged fifty-nine years.

Mr. Hopewell was born in Shelbourne Falls, Massachusetts, in 1859, and the family removing to Springfield, he was educated in the grammar and high schools, and the Collegiate Institute of the latter city, graduating in 1879 and the next year entering business in New York City. Soon afterward he joined the forces of L. C. Chase & Co., with which his elder brother, the late John Hopewell, was connected, this firm being the selling agents for several textile concerns, and the Reading Rubber Manufacturing Co. In 1887, he was admitted to partnership, and since 1892 has been managing partner.

He was a director in the Reading Rubber Manufacturing Co., and was successively assistant treasurer and treasurer of the Sanford Mills, Sanford, Maine, his services in the two positions covering nearly 30 years. He was also a director in the Holyoke Plush Co., Holyoke, Massachusetts. The funeral exercises are to be held at his home in Newton, Massachusetts, May 3. He is survived by his widow and a daughter, and by four nephews, all of whom are connected with the firm of which he was the head.



FRANK HOPEWELL.

INVENTOR OF MANY RUBBER SPECIALTIES.

Charles J. Bailey, who has been a familiar figure in the rubber goods trade for many years, died late last month at his home in Newton, Massachusetts. His obituary will be chronicled in the next issue of THE INDIA RUBBER WORLD.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on April 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co. (new).....	55	60
Firestone Tire & Rubber Co., common.....	96	100
The B. F. Goodrich Co., common.....	95	97
The B. F. Goodrich Co., preferred.....	43½	44
Kelly-Springfield Tire Co., common.....	96½	99
Kelly-Springfield Tire Co., preferred.....	41½	43
Miller Rubber Co., common.....	75	85
Miller Rubber Co., preferred.....	104	108
Portage Rubber Co.....	96	97
Swinehart Tire & Rubber Co.....	111	114
United States Rubber Co., common.....	26	31
United States Rubber Co., preferred.....	56¼	56½
	102	103½

CONVENTIONS, ETC.

May 3-7.—Lima, Ohio. Ohio State Automobile Association.

May 13-18.—Cleveland, Ohio. War Convention of Machinery, Tool and Supply Industry of the United States.

June 5-12.—Hot Springs, Virginia. National Association Automobile and Accessory Jobbers.

June 17-19.—Dayton, Ohio. Society Automotive Engineers, annual midsummer session.

June 18-22.—Berlin, New Hampshire. American Institute of Chemical Engineers, annual summer meeting.

June 26-28.—Buffalo, New York. American Society of Heating and Ventilating Engineers.

News of the American Rubber Trade.

CRUDE RUBBER IMPORTERS COME UPTOWN.

MEYER & BROWN, importers of crude rubber, recently moved to the new Equitable Trust Building from South

William street, where the firm has been located since 1894. About 1910 this concern succeeded the former one of A. T. Morse & Co. It is composed of Messrs. Otto Meyer and Andrew H. Brown. Mr. Meyer was formerly in business for himself in Boston and in 1901 became the New England representative of A. T. Morse & Co., New York City. In June, 1908, Andrew H. Brown, who had been for a number of years with the Boston Rubber Shoe Co., Boston, Massachusetts, and later held the position of assistant treasurer of the General Rubber Co., New York City, a subsidiary of the United States Rubber Co., became connected with A. T. Morse & Co., New York City.



EQUITABLE TRUST BUILDING.

REMOVAL OF OLD CRUDE RUBBER FIRM.

Among the concerns in the rubber industry which are moving uptown, and particularly those which are selecting for their new home The Equitable Trust Building at the corner of 45th street and Madison avenue, New York City, is the limited partnership of Poel & Kelly. As reported at various times in THE INDIA RUBBER WORLD during the last 25 years, many changes of personnel have taken place in this firm, dating from its earliest inception in London, England, in 1838, as Heilburt & Ruben. The first New York connection was in 1864 with E. Marcus, who retired in 1878 and was followed by C. Loewenthal. In 1881 the firm became C. Loewenthal & Co., and in 1892, Reimers & Meyer. It was succeeded in 1899 by Reimers & Co., and in 1903 by Poel & Arnold, which subsequently became Arnold & Zeiss in 1915 and Poel & Kelly in 1917. The New York office has been moved successively from 67 to 56 Pine street, and to 277 Broadway, where it has been located since 1905 until the present removal.

COTTON BROKERS JOIN UPTOWN MOVEMENT.

Albert E. Burr Co., dealer in cotton fabrics and yarns, has recognized the advantages of an uptown move. The concern has been located at 1701 Woolworth Building, New York City, but has now secured offices in the Equitable Trust Building, where several of the crude rubber dealers are also locating.

"B(M)illions for defense but not one cent for tribute."

THE REPUBLIC RUBBER CORP.

The Republic Rubber Corp., 149 Broadway, New York City, was incorporated October 6, 1917, under the laws of New York, for the purpose of acquiring the capital stock of the Republic Rubber Co., of Youngstown, Ohio, and The Knight Tire & Rubber Co., of Canton, Ohio, both Ohio corporations. On December 31, 1917, the corporation as a holding company owned more than 90 per cent of all the capital stock of the above mentioned underlying companies, and it is the intention eventually to take over the properties and business of these companies.

The Youngstown plant has a capacity of some 3,000 automobile tires daily. It also manufactures solid truck tires, rubber belting, balata belting, hose of all kinds, including air brake and tank hose for railroads, molded goods, and a general line of mechanical rubber goods, constituting about 40 per cent of its capacity. The land owned is about forty-five acres, while the floor space of buildings comprises approximately fifteen acres.

The Canton plant has a capacity of 1,000 automobile tires daily and does not, at present, manufacture mechanical rubber goods. Its land area is seven acres, and its floor space is four acres.

Five subsidiaries of the corporation comprise The Republic Rubber Co. of New York, at New York City; Republic Rubber Co. of Massachusetts, at Boston; Republic Rubber Co. of California, at San Francisco; The Republic Rubber Co. of Texas, at Dallas; and The Republic Rubber Co., Inc., London, England.

Direct branches are located at Atlanta, Georgia; Buffalo, New York; Chicago, Illinois; Cincinnati, Ohio; Cleveland, Ohio; Denver, Colorado; Detroit, Michigan; Grand Rapids, Michigan; Kansas City, Missouri; Minneapolis, Minnesota; Philadelphia, Pennsylvania; St. Louis, Missouri.

The present officers are Guy E. Norwood, president; L. T. Petersen, vice-president; C. F. Garrison, secretary; A. L. Irish, assistant secretary; M. I. Arms, second treasurer; H. J. Stambaugh, assistant treasurer; G. L. Stansbury, auditor.

The directors include M. I. Arms, Robert Bentley, C. H. Booth, R. E. Cornelius, H. M. Garlick, Richard Garlick, Guy E. Norwood, L. T. Petersen, T. L. Robinson, R. C. Steese, and John Tod, all of Youngstown, Ohio, and William M. Coleman, of New York City.

The authorized capital stock consists of \$10,000 7 per cent cumulative, with a par value of \$100, and 250,000 shares common, no par value. Outstanding on December 31, 1917, were \$4,523,400 preferred, and 189,501 shares common. No bonds have been issued.

TYSON BROTHERS' NEW PLANT.

Tyson Brothers, Inc., started business 12 years ago as manufacturers of rubber substitutes in Fairfield, Connecticut. After operating a short time, the plant and contents were destroyed by fire, after which the company moved to Stamford, Connecticut. As the business developed it outgrew its Connecticut quarters and located in Carteret, New Jersey, where it remained until the acquisition of the present plant in Woodbridge, New Jersey. This embraces seven and one-half acres of land, an administration building and six factory buildings, all of brick and reinforced concrete, electrically equipped and so constructed as absolutely to prevent conflict in operation. The present factory is located on the Perth Amboy division of the Pennsylvania railroad, and has a capacity double that of the Carteret output. Separate buildings are devoted to the manufacture of each of the company's varied products, including white, brown and black substitutes which are extensively used by rubber manufacturers in this country and Canada.

TRADE NOTES.

The Armstrong Rubber Co., Inc., Newark, New Jersey, has purchased the plant now occupied by the Fore Chemical Co., Monroe street and Midland avenue, Garfield, New Jersey. The building contains about 25,000 square feet of floor space and will be equipped to manufacture tires at the rate of 200 daily. The property covers one and one-half acres and is located in the center of the city, on a railroad siding of its own.

The Keystone Tire & Rubber Co., Broadway and 62d street, New York City, has taken over the factory of the Gryphon Tire & Rubber Co., New York City. The company is putting out a Keystone tire guaranteed for 3,500 miles.

The National Auto Tire Co., 3854 Grand Boulevard, Chicago, Illinois, has increased its capital stock from \$10,000 to \$20,000. It was originally incorporated as National Tire & Repair Co. on February 20, 1913, with a capital of \$3,000, which it increased to \$10,000 February 3, 1916, when it also changed its name to the present one. The officers are: W. C. Erkert, president, and Fred G. Erkert, secretary.

The Sewell Cushion Wheel Co., Detroit, Michigan, announces that sales of its special fire department type of cushion wheels during the first three months of this year show more than 100 per cent increase over the corresponding period of 1917. According to the statistics of the company there are 146 cities in the United States alone which are using Sewell wheels on their motor apparatus.

The advantages of Los Angeles both as a Pacific Coast port of entry for crude rubber and because of its delightful climate which permits working with open windows the year around, were factors in the selection of that city for the location of the \$250,000 factory of the Samson Tire and Rubber Corp., 318 Van Nuys Building, Los Angeles, California. The factory is at Compton and is producing 500 tires daily. A. Schleicher is the president of the company.

The Johnstone Tire & Rubber Co., People's Gas Building, Chicago, with factory at La Porte, Indiana, states that it will manufacture semi-solid and solid tires. It was incorporated in the state of Arizona, November 25, 1914, with a capital stock of \$2,500,000, divided into shares of \$1 each, but the stock now sells at \$2. The officers are: C. W. Mussey, president; E. G. Bird, secretary; and B. R. Blackwelder, vice-president.

The Triple Airless Tire Co., Jenkins Arcade Building, Pittsburgh, Pennsylvania, has purchased two acres of ground for a factory at Minorsville, near Kittanning, where its present plant is located.

The Curtis Tire & Rubber Co., formerly the Vulcanized Products Co., Muskegon, Michigan, has opened a branch in Detroit, at 534 Grand River avenue, under the name of the Curtis-Detroit Sales Co., in charge of Messrs. Cavanaugh and Castle.

The Pearce Tire & Rubber Co., Ashtabula, Ohio, at its annual meeting elected the following directors: A. E. Pearce, Emil J. Anderson, Charles L. Foster, W. E. Wilkens, and H. H. Swan. The directors, in turn, elected the following officers: A. E. Pearce, president; Charles L. Foster, vice-president and consulting engineer; W. E. Wilkens, secretary and treasurer. At a special meeting of the stockholders in February, a resolution was passed increasing the capital stock from \$100,000 to \$200,000, all common. The Secretary of State of Ohio has since issued a certificate granting authorization for the increase. The company expects to be in its new building about the first of June. Equipment is now being installed. H. H. Swan will be superintendent of production. He was formerly with the Kelly-Springfield Co. and the Portage Rubber Co.

The Superior Rubber Co., Inc., 613 Fulton Building, Pittsburgh, Pennsylvania, has increased its capital stock from \$25,000 to \$50,000. Although press notices have given the location of the company as Rochester, New York, it requests that all correspondence be addressed to the Pittsburgh office.

The Simplex Rubber Co., Batavia, New York, elected the following officers a short time ago: Joseph A. E. Whyte, president; Charles C. Townsend, vice-president; Robert Wright, treasurer; Samuel J. Bailey, secretary. President Whyte is also vice-president of the Batavia Rubber Co.

The Oak Rubber Co., Ravenna, Ohio, has increased its capital stock from \$5,000 to \$50,000. It manufactures toy balloons.

The Washington Rubber Co. of Pennsylvania, Washington, Pennsylvania, is now operating its plant. The officers of the company are: Floyd Rose, president; J. L. Lockhart, vice-president; B. F. Mevay, treasurer; and R. P. McDonald, secretary. These, with Dr. Stewart L. McCurdy, John W. Rinehart, and Burt S. Shafer, also comprise the board of directors.

The India Rubber Co. has moved from West 11th street to 1323 State street, Erie, Pennsylvania, where it has installed a complete tire service system.

The Philelectric Co., 746 Prospect avenue, Cleveland, Ohio, has secured the northern Ohio agency for Kokomo tires. This company is one of the largest and best equipped distributors of electrical specialties in Cleveland and the only one to combine with this line a complete stock of automobile accessories.

The Link-Belt Co., Nicetown, Philadelphia, Pennsylvania, is building a small addition to its machine shop, to be used as an office by the planning and production departments. It will cost about \$9,500.

The H. W. Johns-Manville Co., New York City, has established a branch office at 1015 A street, Tacoma, Washington, in charge of P. B. Keyes.

The American Mineral Co., Johnson, Vermont, mining and milling high-grade talc, recently increased its capitalization to \$160,000. The officers are: Hiram J. Potter, Boston, Massachusetts, president, and Harold N. Gordon, Johnson, Vermont, treasurer. The company, which has already enlarged its plant during the last few days, is planning a new mill to double the present output and will build an aerial tramway three and one-half miles long to transport the crude talc from the mines.

The Banigan and Maryland divisions of the United States Rubber Co. at Baltimore, Maryland, were consolidated April 1 and will operate under the name of that company as the Baltimore branch, at 321 West Lombard street. Charles A. Blake is manager.

The Alling Rubber Co., 447 Broadway, Albany, New York, has increased its capital from \$150,000 to \$225,000, to take care of additional business. The officers are: N. E. Alling, president; W. C. Minor, secretary and treasurer; Stanley N. Blakeslee, vice-president, and H. A. Sheldon, assistant secretary and treasurer.

The Gillette Rubber Co., Eau Claire, Wisconsin, has increased its tire capacity from 500 to 1,200 daily, and its tube capacity from 700 to nearly 2,000 daily.

The firm of Robert Badenhop Co., Inc., 67 Wall street, New York City, has changed its name to The Rubber Importers & Dealers Co., Inc. There will be no other change in nature or policy of the concern.

El Encanto Rubber Plantation Co., Canandaigua, New York, has been dissolved under the laws of the state, having gone out of business.

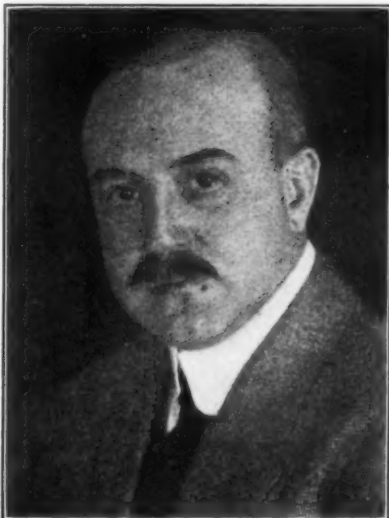
The E. H. Holstein Rubber Co., Hartford, Connecticut, has been granted a final decree of dissolution, although the preliminary proceeding took place five years ago.

The Crompton & Knowles Loom Works, Worcester, Massachusetts, is promoting the Textile Exposition, to be held at the Grand Central Palace, New York City, April 29 to May 11, by using poster stamps on the letters it sends out. The stamps are issued by the Textile Exhibitors' Association, Inc.

A. C. Hughes, Seventh and Flower streets, Los Angeles, California, has been appointed agent for the new high-grade Thermoid tire, manufactured by the Thermoid Rubber Co., Trenton, New Jersey, and reports excellent business.

R. P. M. EAGLES.

R. P. M. EAGLES, member of Taylor, Armitage & Eagles, Inc., was born in Newark, New Jersey, where he attended school and passed his early days in about the same manner as any other young and healthy American.



R. P. M. EAGLES.

Having early evinced a marked business instinct, his education was planned for a commercial career, and when completed, he entered the textile business. This was in 1891, and after a period of seven years, occupying the positions of office boy, clerk and salesman, his ability attracted the attention of Catlin & Co., cotton goods commission merchants who made him department manager. Ten years later he became associated with M. C. Taylor and P. T. Jackson, Jr., in the organization of the Boston Yarn Co., that was absorbed by the International Cotton Mills of New York, and during the next four years successfully managed its selling department.

When Taylor, Armitage & Co. was incorporated in 1914, he became associated with this firm as secretary and general manager, which positions he still holds with the new company, that has changed only in name. His broad training in textiles and sales management, together with specialized knowledge of tire fabrics, amply qualify him for the responsible position he now holds, while hosts of friends in the trade wish him every success.

Mr. Eagles is a member of the Essex County Country Club, the Roseville Athletic Association and the Shongum Club, all in New Jersey. Devoted to outdoor sports, he motors a great deal and plays a stiff game of golf, but his real hobbies are his home and rare books.

NEW JERSEY CAR SPRING & RUBBER CO., INC.,
REORGANIZATION.

The New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey, has been reorganized and incorporated under the laws of the State of New York, with a capitalization of \$500,000 common stock and \$500,000 preferred. The reorganization was effected by G. W. Henne, who is the general manager of the Mansfield Tire & Rubber Co., Mansfield, Ohio. The officials of the newly reorganized company are: G. W. Henne, president; F. Haskell Smith, vice-president and general manager; Charles Hoffman, secretary; G. H. Stephens, treasurer, and E. E. Dearth, assistant treasurer. Mr. Smith was formerly with the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, as was also Mr. Dearth. The directors of the company include W. G. Henne, vice-president and general manager of The Columbia Tire & Rubber Co., Columbiana, Ohio, who is a brother of G. W. Henne; and W. M. Pepper and A. W. Fargo, both of New York City, in addition to the above officers.

The New Jersey Car Spring & Rubber Co., Inc., has been in business since 1858 and is well known throughout the trade as a manufacturer of rubber belting, air hose, mechanical rubber goods, tires, etc.

RUBBER FOOTWEAR MANUFACTURERS SPEED UP GOVERNMENT CONTRACTS.

On April 18, 1918, a meeting was held in Washington, District of Columbia, called by the Supply and Equipment Division of the Quartermaster Corps. Representatives of all the manufacturers of rubber footwear in the United States were present. At this meeting, it was unanimously agreed by the representatives of every company that each and every one would apply the entire productive capacity of their respective plants on hip boots, short boots and all rubber gaiters to government contracts now in force to the additional contracts arranged for at the meeting, until such time as the government requirements are completed. This increased production was agreed to, notwithstanding the monthly deliveries called for in contracts now in force.

TIRE PRICES ADVANCE.

An advance of 10 to 15 per cent in the price of pneumatic casings, tubes and solid tires was announced on April 22-23 by several leading companies. That this will become general on all tires by May 1, is confidently expected. The cost of labor and raw materials had already increased manufacturing costs materially, and when rubber prices advanced eleven cents a pound last month, in view of curtailed rubber imports, a higher selling price for tires was inevitable.

With the exception of Nobby treads, the United States Rubber Co. has advanced pneumatic and motorcycle casings and tubes 10 per cent; the B. F. Goodrich Co. raised by 10 per cent the price on pneumatic casings and tubes, solid tires and motorcycle casings and tubes; Firestone Tire & Rubber Co.'s pneumatic and motorcycle casings and tubes are from 10 to 15 per cent higher, and a general advance of 10 per cent was announced on April 22 by The Fisk Rubber Co. on all its products. Ajax Rubber Co., Inc., reports an increase of 10 per cent on pneumatic casings and tubes.

DETROIT-NEW YORK TRUCK EXPRESS.

The first truck to start on the Detroit to New York motor truck express line instituted recently by the United States Tire Co., New York City, to help relieve railroad congestion and



UNITED STATES TIRE CO.'S EXPRESS TRUCK.

assure dealers of prompt deliveries, arrived in New York with 4,300 pounds of tires for that district, after fighting its way through one of the most severe snows of the winter. The big Pierce-Arrow car was equipped with "Nobby Cord" pneumatic truck tires and made the run from Detroit to Buffalo in 28½ hours. After leaving Buffalo with an army convoy of 60 trucks which were left at Amsterdam, the worst roads and drifts of the trip were encountered, which slowed down the speed and added materially to the wear and tear on the tires. The illustration shows the truck after its arrival at New York headquarters.

BELGIUM'S OFFICIAL EXHIBITION SYMBOLIZED BY FORGET-ME-NOTS.

"Lest we forget," will be the theme of the Belgian Official Exhibition that is to be held in the rooms of the American Art Galleries, 6 East 23rd street, New York City, on May 6, for the benefit of the blind and crippled children of Belgium. The decorations, exhibits, and costumes of the attendants will be of a national character. Views of the civilian and military life of the people will be shown, forming a complete history of the heroic sacrifices made and the brutal atrocities endured by war-swept Belgium.



A spray of flowers, "Forget-me-nots," will be sold for the benefit of Belgian babies. This idea is the suggestion of a well-known rubber man.

When Leon Osterrieth attended the London Rubber Exhibition in 1911 as Belgian commissioner, he suggested the sale of the flower, "Edelweiss," for the benefit of the Congo negroes suffering from "sleeping" sickness, and later, England followed this laudable example by setting apart a day when "Primroses" are sold for charitable purposes. The originator of this charitable idea is now Major Leon Osterrieth (Premier Regiment de Guides), Military Attaché, Chief of the Belgian Military Mission in the U. S. A.

NEW INCORPORATIONS.

Akron Rubber & Tire Co., March 18 (Illinois), \$50,000. Jacob Sandrovitz, David Waldron and Emil Borman. To open books of subscription to the capital stock of above proposed corporation.

Anderson Tire Securities Corp., March 5 (Delaware), 5,000 shares without nominal or par value. William F. O'Keefe, George G. Stiegler and J. H. Dowdell—all of Wilmington, Delaware. The office of the corporation within the State of Delaware is with the Corporation Co. of Delaware, 901 Market street, Wilmington, Delaware. To deal in securities of all kinds.

Belleville Tire & Rubber Co., Inc., April 15 (Delaware), \$20,000. C. L. Rimlinger, M. M. Clancy and F. A. Armstrong—all of Wilmington, Delaware. To manufacture and deal in tires and tubes for automobiles.

Colonial Tire & Rubber Co., April 12 (Delaware), \$1,500,000. E. M. Haslam, E. Lemon and A. McGonigle—all of Wilmington, Delaware. The office of the corporation within the State of Delaware is with the Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in rubber supplies of all kinds.

The I. & R. Double Tread Tire Co., Inc., February 25 (Indiana), \$5,000. Elbert L. Eddington, Edwin W. Johnson—both of Indianapolis, and John Edward Brannon, of Richmond—both in Indiana. Principal office, Indianapolis, Indiana. To engage in selling, double treading, repairing, replacing and exchanging automobile tires, to sell accessories and parts, etc.

The J. & D. Tire Co., March 19 (Delaware), \$10,000. William F. Smith, Cynawyd, Pennsylvania, Rudolph L. DeLisser, Great Neck, Long Island, New York, and Thomas F. Thornton, 100 Broadway, New York City. The office of the incorporation within the State of Delaware is with the Corporation Trust Company of America, du Pont Building, Wilmington, Delaware. To manufacture and deal in tires, tubes, etc.

Lauchin Air Starter & Tire Inflator Device Co., March 15

(Wisconsin), \$50,000. George Y. Lauchin, Joseph F. Rothe, and R. B. Vizkery—all of Green Bay, Wisconsin. Principal office, Green Bay, Wisconsin. To do a general machine shop and manufacturing business in iron, steel and copper products.

Mid-West Tire Co., March 14 (Iowa), \$10,000. L. Krueger (president and treasurer) and S. Krueger (secretary). To engage in manufacturing and delivery of auto tires, supplies, accessories, etc.

Roberts Tire Co., Inc., April 16 (New York), \$25,000. Edmond O. Roberts, 62 William street, Albert O. Briggs, 220 Broadway, and William C. Monks, 503 Fifth avenue—all of New York City. Tire business.

The Steele Vehicle Wheel Tire Corp., March 14 (Indiana), \$20,000. T. S. McGehee, C. A. Wofford, and C. R. Wofford—all of Lockney, Texas. Principal office, Indianapolis, Indiana. To manufacture vehicle wheel tires, improvements thereon and inventions which the corporation acquires by purchase, improvement, or otherwise.

The Superior Rebuilt Tire Co., March 18 (Tennessee), \$1,000. B. Kattler, S. Kattler, Ben Frank and Harry Kisber.

DIVIDENDS.

The American Wringer Co., Providence, Rhode Island, declared dividends of $1\frac{1}{4}$ and $1\frac{1}{2}$ per cent, respectively, on its preferred and common stock, payable April 15 on stock of record March 30.

The B. F. Goodrich Co., Akron, Ohio, has declared a quarterly dividend of \$1 on its common stock, payable August 15.

The Hood Rubber Co., Watertown, Massachusetts, has declared its forty-first consecutive quarterly dividend of $1\frac{1}{4}$ per cent on its preferred stock, payable May 1 on stock of record April 20.

The Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of \$1 per share on its common stock, payable May 1 to stock of record April 15.

The Keystone Tire & Rubber Co., Inc., New York City, declared its regular quarterly dividend of two per cent and an extra dividend of one-third of one per cent on preferred stock, and its regular quarterly dividend of three per cent on its common stock, payable April 1 to stock of record March 22.

The Mohawk Rubber Co., Akron, Ohio, declared a dividend of $1\frac{1}{4}$ per cent on its preferred stock, payable April 1, in addition to the dividend on common stock and the twenty per cent stock dividend already noted in our issue of April 1, 1918.

The Portage Rubber Co., Akron, Ohio, has declared a quarterly dividend of three per cent on its common stock, payable May 15 on stock of record May 5; also a quarterly dividend of $1\frac{1}{4}$ per cent on its preferred stock, payable July 1 to stock of record June 20.

The United States Rubber Co., New York City, declared a quarterly dividend of two per cent on its first preferred stock, payable April 30 to stock of record April 15.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, declared the following dividends: quarterly of $1\frac{1}{4}$ per cent (87½ cents per share) on its preferred stock, payable April 15 on stock of record April 4; quarterly of $1\frac{1}{4}$ per cent (87½ cents per share) on its common stock, payable March 31 on stock of record April 4.

BRAZILIAN RUBBER DIRECT TO BOSTON.

A schooner loaded with ore, rubber and cocoa from Bahia, Brazil, recently arrived at Boston, Massachusetts. It was the first shipment of the kind ever sent direct to that port from Brazil, and comprised a very valuable consignment of rubber and manganese ore.

S. V. Norton, manager of truck tire sales for The B. F. Goodrich Co., Akron, Ohio, is the author of "The Motor Truck as an Aid to Business Profits," to be issued by the A. W. Shaw Co., Chicago, publishers of "System" and other business literature.

JOHN B. TUTTLE, B. S.

JOHN B. TUTTLE, associate chemist of the Bureau of Standards, Washington, District of Columbia, has resigned that position to take up the work of chemical research for the Firestone Tire & Rubber Co., Akron, Ohio.



JOHN B. TUTTLE.

The Firestone company is to be congratulated on securing the services of so well-known and able a man for this work. Mr. Tuttle, who is a native Pennsylvanian, graduated from the University of Pennsylvania in 1908 with the degree of Bachelor of Science. He immediately joined the Bureau of Standards, at first working on printing inks, oils and gums.

Three years later he took up rubber chemistry and was in charge of that work up to the time of his resignation.

Besides his researches in the printing ink and oil industries, he is the author of "The Determination of Total Sulphur in India Rubber," "A Study of Some Recent Methods for the Determination of Total Sulphur in Rubber," "The Sampling of Rubber Goods," "The Determination of Barium Sulphate and Barium Carbonate in Vulcanized Rubber Goods," "The Testing of Rubber Goods," and "The Direct Determination of India Rubber." He is a member of several important committees. Among them are the Joint Rubber Insulation Committee, which has issued two reports on "A Specification and Analytical Procedure for 30 per cent *Hevea* Rubber Insulation"; the National Fire Protective Association Committee on Specifications for Gasoline Hose; the Society of Automotive Engineers Committee on Specifications for Gasoline Hose for Airplanes; the Navy Department Committee on Specifications for Rubber Goods; the Government Committee on Specifications for Balloon Fabrics. He is secretary of the Rubber Section of the American Chemical Society, and a member of the Cosmos Club of Washington and the Chemists' Club of New York.

DU PONT CO. ELECTS OFFICERS.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, announce the election of the following officers: Pierre S. du Pont, president; H. M. Barksdale, C. L. Patterson, J. A. Haskell, Irenée du Pont, E. G. Buckner, Lamont du Pont, H. F. Brown, F. G. Tallman, F. L. Connable, William Coyne, H. G. Haskell, R. R. M. Carpenter and John J. Raskob, vice-presidents; Alexis I. du Pont, secretary; F. D. Brown, treasurer; Charles Copeland, William F. Saltmarsh, W. F. Raskob, E. W. Proctor and J. K. Rodgers, assistant treasurers; L. R. Beardslee and M. D. Fisher, assistant secretaries. The directors include the president, vice-presidents and secretary, and, in addition, the following: A. Felix du Pont, Eugene du Pont, Eugene E. du Pont, Henry F. du Pont, J. P. Laffey, H. M. Pierce, C. A. Patterson and Charles L. Reese.

A Liberty Bond in the hand is worth two in the booth.

SUCCEEDS JOHN B. TUTTLE.

ARNOLD H. SMITH, who has just been appointed successor to John B. Tuttle at the chemical laboratory of the Bureau of Standards, Washington, District of Columbia,



ARNOLD H. SMITH

was brought up in an atmosphere where matters pertaining to rubber were of chief importance. He spent the earlier part of his life in Akron, Ohio, graduating from high school there. He studied at the University of Akron one year and completed his college work at Armour Institute of Technology, graduating with the degree of B. S. in chemical engineering. Since that time he has been in the rubber laboratory of the Bureau of Standards at

Washington, doing research work along various lines of the rubber industry, and he has now been placed in charge of that important work. He is a member of college fraternities, of the American Chemical Society and of the Chemists' Club of New York City.

TAYLOR, ARMITAGE & EAGLES, INC.

This corporation was organized four years ago as Taylor, Armitage & Co., specializing in tire fabrics with the product of the Passaic Cotton Mills of Passaic, New Jersey, as a nucleus. The sales of this company were then 2,500,000 pounds of tire fabric annually. To-day, with the addition of the Rotch Mills, Penrod Mills, American Spinning Co., all of New Bedford, Massachusetts, and The American Tire Fabric Co., Newburyport, Massachusetts, the sales of Taylor, Armitage & Eagles, Inc., are more than 35,000,000 pounds a year.

M. C. Taylor, president, is the financial head; J. D. Armitage, treasurer, is the manufacturing expert, and R. P. M. Eagles directs the selling policy of the company.

WESTINGHOUSE ELECTRIC PRODUCTS CO.

Announcement has recently been made by the officials of the Westinghouse Electric & Manufacturing Co., Schenectady, New York, that as of April 1, 1918, the Copeman Electric Stove Co. will be merged in a new company to be known as the Westinghouse Electric Products Co., with headquarters and factory at Mansfield, Ohio. This factory will be devoted to the manufacture of heating appliances previously made at the Newark Works of the Westinghouse company, and the Flint, Michigan, Works of the Copeman Electric Stove Co.

The operations of the Westinghouse Electric Products Co. will be directed by W. K. Dunlap, as general manager. Mr. Dunlap is also assistant to the vice-president of the Westinghouse Electric & Manufacturing Co.

The Goodyear Tire & Rubber Co., Akron, Ohio, receives 11,000 pieces of mail daily, as much as many small towns do in a week.

HARRY THATCHER DUNN.

HARRY T. DUNN, president of the Fisk and Federal Rubber companies, while young in years is old in rubber manufacturing experience, having spent the last nineteen years in the rubber business. He began commercial life with the F. B. Stearns Co., manufacturer of the Yellow Fellow bicycle, going later to the Overman Wheel Co., to close up the business for the receivers of that concern.



HARRY T. DUNN.

In 1898 Mr. Dunn became sales manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, and in 1909 was elected its president, which position he still occupies. He has seen the business of the Fisk company grow from less than \$100,000 a year, when it occupied 27,000 square feet of floor space, to a total of \$31,000,000 in 1917, requiring factories covering almost thirty

acres of floor space to take care of its constant growth.

Mr. Dunn maintains his permanent home in New York City, giving part of his time each month to The Fisk Rubber Co., Chicopee Falls, Massachusetts, and The Federal Rubber Co., Cudahy, Wisconsin.

While business is his hobby and he devotes his time almost incessantly to it, Mr. Dunn finds recreation at his summer place at Hyannisport, Massachusetts, where he gives the same close attention to vegetables, fruit trees and flowers that he does to business matters.

He belongs to many clubs and is interested in a number of enterprises, among the latter being the Willys-Overland Co., of whose board of directors he is a member.

PERSONAL MENTION.

Raymond V. Morris has been appointed general manager of the Savage Tire Co. and of the Savage Tire Corp., San Diego, California. He was formerly connected with the Curtiss Aeroplane Co.

John L. Gibney, formerly head of the Gibney Tire & Rubber Co., Conshohocken, Pennsylvania, has been appointed manager of sales of the Polack Tyre & Rubber Co., with offices in New York City. For many years Mr. Gibney was associated with his brother in the operation of one of the important tire and accessory distributing stores in Philadelphia.

William G. Brown, the rubber expert of the Consulting Co., Cincinnati, Ohio, is now on the Pacific Coast, where he went to install an efficiency system in one of the important mills of that section.

G. A. Binz, formerly manager of the meter department of Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, has been appointed sales manager.

George S. Shugart has been appointed general manager of the United States Tire Co., New York City, succeeding O. S. Tweedy, resigned.

Joseph C. Weston has been elected vice-president of the United States Tire Co., New York City; retaining also the title of director of sales.

James G. Whiteley, who will be remembered by the trade as former Belgian consul to the Congo Free State, was in New York recently. He is now Belgian consul at Baltimore, Maryland.

Major Leon Osterrieth, well known to the rubber trade of both continents and brother of P. L. Osterreith, who has large planting interests in the Far East, was in New York last month.

J. J. Hawkins is manager of the United States Rubber Co., C. R. Winslow division, San Francisco, California. He was formerly manager of the Standard Rubber Shoe division until its consolidation with the United States Rubber Co., Chicago branch, in December, 1917.

C. C. Allen, the veteran shoe man, has taken charge of Rex-Hide fiber sole sales in St. Louis, Missouri, and adjacent territory, for the Rex-Hide Rubber Manufacturing Co., East Brady, Pennsylvania.

Frank M. Pierce is the new secretary and treasurer of the Pierce Wrapping Machine Co., 617 West Jackson Boulevard, Chicago, Illinois. He succeeds John S. Campbell as treasurer, the latter being no longer in the employ of the company in any capacity.

THE BAYER CO.

The property and business of the Bayer Co., Inc., whose main plant is located at Rensselaer, New York, has been seized as an enemy alien industry by the Alien Property Custodian, A. Mitchell Palmer, and is now being operated by a reorganized board of directors of five American citizens. Among the new directors are Nicholas F. Brady, of the directorate of the United States Rubber Co., and George H. Carnahan, president of the Continental Rubber Co.

The Bayer Co. is owner of basic patents of the manufacture and use of important organic materials largely employed in the rubber manufacturing industry as vulcanization accelerators.

THE FIFTH NATIONAL FOREIGN TRADE CONVENTION.

The theme of the Fifth National Foreign Trade Convention held April 18 to 20 at Cincinnati, Ohio, was "The Part of Foreign Trade in Winning the War." Speakers of national importance in foreign trade matters addressed this representative gathering of merchants and manufacturers. E. H. Huxley, president of the United States Rubber Export Co., Limited, and one of the trade advisers of the convention, took active part in the proceedings.

LEE RUBBER & TIRE CORPORATION.

At the annual meeting of the Lee Rubber & Tire Corp., New York City, a holding company which owns all the stock of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, James A. Fayne and Walter R. Herrick were elected directors to fill vacancies caused by the resignations of John W. Prentiss and Grayson M. P. Murphy, both of whom are now in government service.

The officers of the corporation are John J. Watson, Jr., president; A. A. Garthwaite, vice-president and treasurer; Henry Hopkins, Jr., secretary; John Kearns, general manager, and Henry E. Field, general sales manager.

Chairman Watson in his address to the stockholders stated that at the present rate of production, the coming year's output would be about 280,000 tires. Particular attention has been given the manufacture of a quality tire, and in addition to the puncture-proof and fabric tires, the company is producing a cord tire which has been giving excellent results. The company has, during the past year, established its own branch stores in Atlanta, Georgia; Boston, Massachusetts; New York City and Buffalo, New York; Chicago, Illinois; Columbus, Ohio; Indianapolis, Indiana; Louisville, Kentucky; Milwaukee, Wisconsin; Providence, Rhode Island, and St. Louis, Missouri. The Pennsylvania company also has a subsidiary company, the Lee Tire and Rubber Co. of New York, Inc., which takes care of sales.

The treasurer's report for the year ended December 31 shows a surplus of \$38,984.28.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

AKRON rubber companies during the Third Liberty Loan campaign in Summit county proved they had a right to proclaim themselves 100 per cent patriotic. More than \$3,000,000 of the \$6,000,000 raised in Summit county was subscribed by employees of the big rubber companies here.

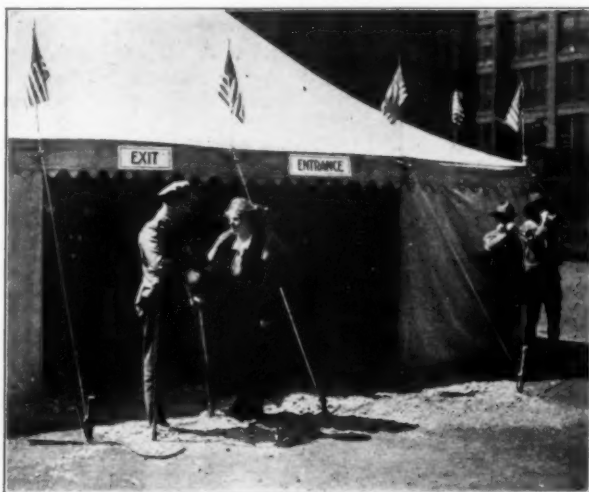
From the start of the campaign the rubber companies entered into it with a determination to induce every employee to subscribe. The result was that hundreds of departments in the plants boasted of having sold a bond to every employee and not a single department failed to fill its quota. Many of the departments oversubscribed their quotas on the first day of the sale and the records made compared favorably with any plant in the State.

The selling organization in the rubber plants was one of the most efficient ever seen in Akron and not a man or woman escaped being solicited for a subscription. The reasons for the issue of the bonds at this time were explained in such a manner that the workers readily subscribed, enrolling themselves on the side of democracy and freedom.

In a number of plants, aliens who refused to buy bonds or who spoke in a slighting manner of the Liberty Loan were roughly handled by aroused workers. The intervention of company officials prevented any serious injury being done the recalcitrants, but rather than face a strike the slackers were discharged.

* * *

Corporal Leo Pierron, of the second Canadian battalion, is seen in the accompanying photograph greeting Miss Emma Whittaker, Goodrich girl and a native of Flesherton, Ontario. This picture was snapped in front of one of the two tents erected at



CORPORAL LEO PIERRON GREETING MISS EMMA WHITTAKER.

The B. F. Goodrich Rubber Co. plant to aid in the company's third Liberty Loan campaign. The tents contained war relics collected from the various Goodrich branches by E. C. Tibbitts, advertising manager.

Corporal Pierron and two other wounded Canadian soldiers were bombarded with questions from Goodrich workers. The corporal was gassed once and wounded three times during his 29 months' service in France. He enlisted in August, 1914, the second day after war was declared, and was one of the "first thirty thousand" to cross the Atlantic for Canada.

The Red Cross chapter of the Goodrich plant has 75 women enrolled, and much of the spare time of the members is spent in knitting and sewing for the soldiers. This chapter has pre-

pared more than 8,000 surgical dressings, knitted 79 sweaters, three scarves, four pairs of wristlets, twelve pairs of socks and three helmets.

Forty members of the Goodrich Male Chorus, led by A. K. Morgan, scored a big hit at the patriotic rally held March 20 in the State Armory. The chorus sang several numbers and each was generously applauded. The rally was arranged by the military committee of the Chamber of Commerce and the film "Arouse America" was shown. Later in the month the Goodrich Male Chorus gave an entertainment for the soldiers at Camp Sherman.

* * *

At the close of its campaign week for subscriptions to the Third Liberty Loan, the Firestone Tire & Rubber Co., Akron, Ohio, had secured a total of \$562,500. Subscriptions continued, however, after the campaign week. The company adopted the plan of financing such employees as could pay for bonds only on the instalment plan, on the basis of \$1 down and \$1 weekly for a \$50-bond and \$2 down and \$2 weekly for a \$100-bond. The comparison of results between the factory organization and the office organization is interesting. In the factory, 99 per cent of the total employees subscribed and 100 per cent in 51 departments out of 60. In the office, 96 per cent of the total employees subscribed and 100 per cent in 35 out of 48 departments. The percentages favoring the different methods of buying the bonds were as follows:

	COMPANY PLAN. Per Cent.	BANK PLAN. Per Cent.	GOVERNMENT PLAN. Per Cent.	CASH PLAN. Per Cent.
Factory	93	3	1	3
Office	89	6	4	1

The company anticipates that when the official government date for closing subscriptions to the loan arrives, the total showing will be 100 per cent for its factory. It lays stress upon the fact that the results reported are due to the spirit of their employees and not to coercion of any sort on the part of officials.

* * *

Two new developments in Akron rubber stock are of interest to investors. The Mohawk Rubber Co., which recently increased its authorized capitalization from \$1,050,000 to \$2,050,000, has voted a 20 per cent stock dividend to stockholders and authorized its usual 2½ per cent cash dividend on common stock. This puts \$200,000 more stock outstanding.

Although not on government work the factory of the Mohawk Rubber Co. has a distinctively war-time appearance. For certain forms of light work women have been employed the past six months, replacing men called to the colors or transferred to other departments. They have been found equal, if not superior, to men for the tasks in which they are engaged. The Mohawk factory girls wear khaki bloomers, and are not adverse to posing for the photographer. The Mohawk plant is now running at top-notch capacity.

J. W. Berry, salesman for the Mohawk Rubber Co., has been called by the Government to Washington to serve as a carrier pigeon expert. Mr. Berry is the owner of several cups and medals won by his carrier pigeons. His home is in Louisville, Kentucky.

* * *

The Firestone Tire and Rubber Co. has established the office of comptroller, the man chosen for the place being Thomas Clements, who came to Akron from Chicago, where he has had long experience in the carriage and automobile manufacturing business.

R. B. Sanderson, of the electrical department of the Firestone Tire & Rubber Co., has enlisted and is now in training at Camp Meigs. Carl Byers, formerly chief of the flying squad of the same company, is in the Quartermaster's Corps, stationed at El Paso, Texas.

On the occasion of its first anniversary, R. M. Loewenthal & Co., Inc., 53 East 42nd street, New York City, auto tire scrap dealers, opened a branch office at Akron, Ohio, under the management of H. C. Jones, formerly with The B. F. Goodrich Co.

C. E. McLain, formerly of The Electric Rubber Reclaiming Co., Barberton, Ohio, is supplying the trade with a powdered accelerator of light color, known as "Accelerator No. 1."

The Mason Tire & Rubber Co., Kent, will manufacture solid truck tires. This is a new departure for the company, but in line with its progressive policy. The new solid tire, in connection with the present complete line of pneumatic tires, will give a Mason tire for every kind of automobile service. All sizes of solid tires will be made, from giant tires for use on the largest and heaviest trucks to small sizes for light delivery trucks. The Mason company expects to be turning out small size truck tires within the next three months and all sizes will be manufactured by fall, according to officials.

The Miller Rubber Co. has authorized the sale of \$600,000 of its treasury common stock at par. Stockholders had been hopeful that this stock would be released as a stock dividend, but the necessity of carrying \$1,600,000 larger inventory this year than last resulted in the stock being put on sale. The Miller company is capitalized at \$10,000,000 in equal amounts of common and preferred. Of this only \$3,600,000 of the common has been issued up to the present time, and \$3,000,000 of the preferred. A statement issued by the company to stockholders predicts sales of \$15,000,000 to \$17,000,000 this year, with factory additions all completed to take care of growing demands up to a capacity of \$25,000,000 to \$30,000,000 business.

The Adamson Machine Co. on the morning of March 30 suffered loss between \$80,000 and \$100,000, fully covered by insurance, in a fire in the pattern shop, tool room and drafting department. The building was fireproof but considerable damage was done to machinery and equipment. It is not known how the fire started. The company is operating up to 80 per cent of its capacity and increasing the percentage daily. It expects to resume normal activity within a month.

Owen Moynihan has been appointed general sales manager of The Amazon Rubber Co. He was formerly New York City branch manager.

The Goodyear Tire & Rubber Co. is giving special attention to the needs of sugar centrals by supplying drive and conveyor belts of rubber, as well as strainers and packing.

Shelby A. Falor has been appointed to membership on the Board of Control supervising operations of the general office and branches of The Goodyear Tire & Rubber Co.

Plans have already been made and the material ordered for the new hospital to be built by The Goodyear Tire & Rubber Co. at Plant No. 1. The new hospital when complete will extend out over the roof of Building No. 7 and will take in six bays.

The hospital will have two private rooms in each of the three wards. There will be an isolation ward where a badly injured patient can be treated away from the noise and the view of other patients. In the temporary ward, or patients' rest room, there will be a number of hospital beds for patients who are not seriously injured. The old hospital will be used by women to receive treatment unless they are injured so that an operation is necessary.

Plans for a triangular track and field meet between athletic teams from the Firestone, Goodrich and Goodyear companies are now under way. According to present plans, the meet will be held at Seiberling Field on May 30.

Men who have made a name in track circles throughout the country have been asked to officiate. Among them are Alonzo Stagg, of Chicago University; Tom Keane, of Syracuse; Dr. St. John, of Ohio State; Xen. Scott, of Western Reserve; S. S. Rush, of Princeton, and E. S. Conner, of Camp Sherman. Silver loving cups have been ordered and will be presented to the team winning the meet, winner of the relay race, cross country run and individual point winners.

For the third consecutive year the basket ball team of the Goodyear Tire & Rubber Co., Akron, Ohio, has captured the city basket ball championship, retaining the loving cup that was won in 1916 at the end of the first championship season of the city league.

The annual minstrel show of the Goodyear Friars Club was held Friday, April 12, at Music Hall. The program was worthy of an organization of professionals, and a packed house witnessed and applauded the performance.

The club has received a pennant and a large picture of the boys at Camp Sheridan, Montgomery, Alabama, sent as a token of their appreciation of the performance put on by the Friars at Camp Sheridan for their benefit.

The letter that came with the pennant and picture voices hope that some day the Friars may again visit the Southland and give the Ohio boys a good time with their music, gags and jokes.

One of the most recent employees' organizations of the Goodyear Tire & Rubber Co. is the Three Arts Club, whose efforts are in the line of music, dancing and drama. The costume adopted is of the Pierrot type, new among such organizations in this country. Many who are prominent in local musical circles are members. The first concert of the club, given April second, proved the most elaborate ever attempted in amateur theatricals in the city.

The classes in wireless telegraphy that were started in the factory school of the Goodyear Tire & Rubber Co. last January have now completed their work and 17 of the men have been sent to the government school at the Carnegie Institute of Technology at Pittsburgh to complete their training for the Signal Service. Other classes have already been started.

Dr. M. E. Danforth has gone to Camp Lee, Petersburg, Virginia, to join his unit of the Medical Reserve Corps. He will be stationed at the base hospital there until he is sent on overseas duty. Dr. Danforth entered the service of the Goodyear company in November, 1917, having been previously engaged in recruiting physicians for government work.

Tom Meagher, formerly in charge of the Goodyear storerooms of the Materials Department, now a lieutenant in the Quartermaster Corps of the United States Army, has arrived safely in France. Lieutenant Meagher was a graduate of the first officers' training camp at Fort Ben Harrison, and for a time was stationed at Camp Sherman.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

EVERY week shows increasing difficulty in obtaining workers in the rubber mills in this vicinity. The want columns contain advertisements daily for experienced rubber workers, and for men and women to learn, pay being offered while learning. A shoe factory has adopted a novel expedient, which might well be tried by rubber men. It has added a nursery department to its factory, and has advertised that it will care for the babies and young children of such mothers as will work in the factory. The management takes the broad view that many ex-employees who formerly worked in the factory have married, and are now unable to be absent from their homes because they must care for their children. This plan enables these experienced workers to help out, at this time of labor shortage. There are undoubtedly many women who formerly worked in rubber footwear

or clothing factories who are similarly situated, and who might be induced to join the working forces again if a similar opportunity were offered them to do so.

Not only is it difficult to get workers, but manufacturers are finding it difficult to hold them after they are secured. The draft is taking many of the younger men, while the war industries are taking workers of both sexes, who are induced to leave the rubber mills because certain other factories offer larger pay. Higher wages, greater opportunities, broader welfare work and special benefits are being offered to hold the work-people, and yet there are vacant benches in many factories which the proprietors are anxious to see filled.

The Converse Rubber Shoe Co., Malden, Massachusetts, has insured the lives of all its employees. Those who have been in its service for three months are insured for \$500. Those having been in continuous service for one year are given a \$600 policy, and the amount increases at the rate of \$100 a year until the employee of five years or longer gets a \$1,000 policy. The company states that this action has been taken as a means of appreciation in substantial form of the value it places upon the loyal cooperation of its workers and as a means of providing for those dependent upon employees at the time of their death.

F. R. Goodell, who will represent the Converse Rubber Shoe Co. in South America, had an irritating experience in his endeavors to reach his new field of operations. He engaged passage to Buenos Aires on one of the regular liners, and only a day or two before the date of its sailing received word that the steamer had been requisitioned by the Government for transportation of men, munitions or supplies to Europe. No other opportunity of reaching any South American Atlantic port presenting itself, he promptly changed his itinerary and a week ago sailed for Colon on a United Fruit Co. steamer. By this time he has crossed the Isthmus of Panama, and has either sailed, or will soon, down the coast to "a Pacific port," as the newspapers say, and will cross the Andes to his destination. It is a case of "the longest way around is the quickest way there," and Mr. Goodell is eager to be doing something instead of waiting for a quicker but longer delayed passage.

The Fisk Social and Athletic Association, composed of employees of The Fisk Rubber Co., Chicopee Falls, Massachusetts, always has a special athletic day on May 30, at Fisk Park, a fine field furnished by the company. Baseball games are always a feature, and the Fiskers have two wonderful teams as "toppers" and a number of minor teams. Track sports, bicycle, motorcycle and auto races are promised, and, of course, dancing and banqueting.

The United States Rubber Co.'s Boston branches made an excellent showing in the Liberty Bond Day parade in this city early this month. Edwin H. Kidder, district manager of the United States Tire Co., was marshal of the division, which turned out about 2,000 strong, representing not only the tire company but the several subsidiaries of the United States Rubber Co. in and near this city. A feature of this division was a big airplane, mounted on a float, and considerable excitement was caused when one of Boston's streets, the one which the City Hall faces, was found almost too narrow to allow its passage. However, by careful driving and some guidance from the sides, the float finally turned the corner into the wider Washington street without damage. Another attraction of this division was the company's great service flag, containing 2,104 stars and carried horizontally by 48 young women employees.

Two hundred members of the factory organization were guests of The Fisk Rubber Co., Chicopee Falls, Massachusetts, at the

Hotel Kimball, Springfield, Massachusetts, April 9. The assemblage included the department heads, the foremen, and the assistant foremen. Factory Manager Anderson was toastmaster. Treasurer Harry G. Fisk told of the small start of the company twenty years ago, and compared it with the present extensive corporation. Vice-president E. H. Broadwell spoke of the cooperative spirit manifested between the various departments, and told what the company is doing to convince the employees that the company is the best concern in the world to work for. An orchestra and a magician were included in the professional part of the entertainment.

W. E. Dermody has been promoted to the position of manager of the Boston branch of the Goodyear Tire and Rubber Co., succeeding C. B. Peschman, who has been appointed assistant manager of the New England district for the same company. Mr. Dermody became associated with the Goodyear company at New Orleans as salesman in 1911. In 1913 he went to Akron as field manager of the central division of the solid tire department. In January, 1914, he was branch manager at Nashville, Tennessee, and that same year he returned to New Orleans as manager. He has been recently the Atlanta, Georgia, representative.

The Hood Rubber Co., Watertown, Massachusetts, has started a campaign of consumer advertising, beginning April 15, on their leisure line rubber-soled canvas upper shoes with high wooden heels lasted similar to leather shoes, which are expected to have a great run during the summer season.

Manager of Export Sales Leighton, of the Hood Rubber Co., returned early last month from an extended trip through South America, passing through the Panama Canal and visiting the various cities of the Western Coast, then crossing the Andes to Buenos Aires, making a most successful business trip for the company.

The McGraw Tire & Rubber Co., East Palestine, Ohio, has appointed Frank R. Bryan New England sales manager for its Boston branch at 1112 Boylston street.

The Mason Tire & Rubber Co., Kent, Ohio, announces that Farley & MacNeill, 107 Federal street, are acting as exclusive agents in Boston for Mason tires.

The Tyer Rubber Co., Andover, Massachusetts, announces that Farley & MacNeill are also acting as exclusive distributors in Boston of its Tyrian red tires.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE Liberty Loan campaign in Rhode Island was an active one in which the rubber industry played a prominent part. The announcement by Colonel Samuel P. Colt, president of the United States Rubber Co., that the company has subscribed for \$2,500,000 of the bonds—\$2,000,000 for the corporation and \$500,000 for its employees—gave the movement a considerable impetus in this section. Of this amount, the following were announced as being credited to Rhode Island: \$75,000 to the National India Rubber Co., Bristol; \$75,000 to the Woonsocket Rubber Co., Woonsocket; \$50,000 to the Revere Rubber Co. and Mechanical Fabric Co., Providence. Colonel Colt's personal subscription was announced as \$100,000.

Subscriptions amounting to \$15,000 were reported as being taken by the Glendale Elastic Fabric Co., Providence.

The Liberty Loan, however, did not succeed in eclipsing entirely the importance of the improvements and expansions that are under way at the local rubber plants. The largest of these resulting from the taking over of the property of the American Locomotive Works, Providence, by the United States Rubber

Co., as noted in these columns last month, when completed is going to increase materially the business activities here.

It was announced here early last month that when the new plant of the United States Rubber Co. begins operations it will manufacture an additional \$20,000,000 worth of tires annually. Extensive alterations will be necessary before the active operations begin, however. The property adjoins the plant of the Revere Rubber Co. and will become a part of the Revere unit, operated under the direction of H. W. Waite, factory manager of the Revere plant. The new section will add about 3,000 employees to the pay-roll of the company at the start.

In addition to the manufacture of solid-truck tires, the new factory will devote considerable space to the development of pneumatic cord tires for commercial vehicles. The new plant has a floor area of 245,848 square feet. It covers a tract of ten acres with a river frontage and a siding connection to the main line of the New York, New Haven & Hartford railroad. It is equipped with a large power plant, and the buildings are in excellent condition.

The National India Rubber Co. Minstrels gave a benefit performance Wednesday and Thursday evenings, April 17 and 18, for the Memorial Ambulance Fund. The company orchestra furnished the music and E. E. Essex, its leader, was presented with a silver cup on the second evening. The printing department of the factory produced a 32-page advertising program in which space was sold to advertisers as a source of income besides the proceeds gained from attendance at the entertainment. The total receipts are to be devoted to the Memorial Ambulance Fund. As noted in our issue of April 1, 1917, the ambulance was purchased shortly before that date as a memorial to the late Le Baron C. Colt, nephew of Colonel Samuel P. Colt, president of the United States Rubber Co., with a sum of money raised by the foremen, office employees and others at the National India Rubber Co. and by relatives and friends outside of the factory.

Plans are being completed for the improvement of the public wharf at the foot of Church street, Bristol, by the National India Rubber Co., in order to increase its transportation facilities. The cost will be \$40,000. The wharf is to be equipped with a large coal pocket in which to carry fuel for the National factory, and so arranged that they may be filled directly from barges.

The National plant, which burns from 60 to 70 tons of coal daily, when in full operation, has arranged to give all the cinders to the town of Bristol, to be used in the repairing of its highways.

The new branch offices at the plant of the National India Rubber Co. recently established for the disposal of Thrift Stamps, for business efficiency and for industrial relations, are being conducted with the success that was expected, when a beginning was made along these lines several weeks ago. A full corps of managers and clerks are kept busy with the details of the work. In the branch of personal efficiency, classes have been formed and already many of the employees have become studious, with an aim for advancement.

William J. Duffy, one of the most expert journeymen rubber workers in this section and for more than half a century identified with the industry in Providence and Bristol, died March 25, at the Park Hill private hospital, Providence, where he had been ill for about three weeks, suffering from a complication of diseases. He was in his 71st year.

He was born in Manchester, England, December 12, 1847, coming to Bristol with his parents when a small boy. After attending the public schools until he was 15 years old he entered the employ of the National India Rubber Co. and for forty years was employed in various departments and capacities, the last 15 years of his association with the concern being as foreman in the clothing department. He removed to Providence in 1902, accepting a position as foreman of one of the departments at the Davol Rubber Co.

Mr. Duffy was a first lieutenant in the First Light Infantry Company, a former flourishing military organization of Bristol; he was the last surviving charter member of St. Mary's Total Abstinence Society, and he also belongs to the old Metacom Debating Society. He was a man of exceptionally noble character, possessed of a fine disposition, and all who knew him held him in high esteem. Besides his widow, he leaves two sons, a daughter, and two brothers.

Michael Ezikorick, for several years in the employ of the National India Rubber Co., Bristol, died at Fort Rodman, where he was stationed as a member of the Nineteenth Company, Coast Artillery, about the middle of the month. Death was due to pneumonia, and a mother, a brother and three sisters survive him. A military funeral was held at Bristol, the Bristol Train of Artillery escorting the body to the grave.

The Davol Rubber Co. has arranged to insure, at its own expense, the life of each of its employees, for a sum varying from \$500 to \$1,000, dependent retroactively on the length of service, the amount of the policy increasing year by year until at five years the maximum of \$1,000 is reached. This has been done in the belief that the fewer the changes in the working force, the better for both employer and employee, the ideal relationship being obtained only through long association. The arrangement is in addition to benefits provided for under the liability and compensation laws. The company asks in return only that each employee continue to do his part in maintaining the spirit of loyalty and co-operation necessary to mutual success.

The Lynn Rubber Co., which recently purchased a large tract of land in Warren for the erection of a new plant, broke ground on the morning of March 25, for the foundation of its first building at the south side of the Fall River branch of the New Haven railroad. Vice-president Charles H. Hill shovelled the first earth away from the site and since that time the work has been pushed rapidly. The new building is to be 120 feet long by 74 feet wide and will be built of brick, mill construction, one story high and will contain the mill room and press room. The boiler house and offices will be separate and will be erected as soon as the mill section is well under way. A cement foundation has already been laid for the mill section and, when completed, the factory will be used for the manufacture of a variety of rubber products.

The directors of the American Wringer Co., Woonsocket, have created a new position, that of plant manager, and have selected W. Maxwell Reed, of Framingham, Massachusetts, who has already assumed the duties of the position. The office of plant manager does not interfere with the positions of other men who have executive responsibilities there. Mr. Reed has been connected with several important factory interests, his most recent affiliation being with the Roebling steel people.

The city of Newport, upon recommendation of Chief Engineer Andrew J. Kirwin, has voted to purchase from the Dayton Tire Co. six new tires for motor apparatus of its fire department.

The Hayward Rubber Co., Inc., for thirty years located at 389 Westminster street, last month opened its new store at 85 Washington street, Providence, where the firm has taken a long lease.

The city council fire committee of Woonsocket has awarded the contract for 1,000 feet of fire hose to the Combination Ladder Co., Providence.

The Collyer Insulated Wire Co., Pawtucket, has filed notice with the Secretary of State of Rhode Island that the stockholders have voted to increase its capital stock from \$200,000 to \$500,000.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE rubber industry in Trenton has taken a big jump during the past month and all the plants are very busy. A representative of THE INDIA RUBBER WORLD was informed by different rubber manufacturers that business is now at its height and that it has not been better for many years. The manufacturers are optimistic and can see nothing but good times ahead for years to come.

Most of the Trenton rubber factories are increasing their working forces as rapidly as possible.

The Empire Rubber and Tire Corp. has many big orders to fill and is engaging extra help. During the month, tire finishers, hose strippers and foremen were engaged. The Essex Rubber Co. placed extra girls at work on heel and sole trimming and also engaged a number of machinists and toolmakers. The Hamilton Rubber Manufacturing Co. has places open for a number of mixing mill men.

The United & Globe Rubber Manufacturing Cos. are busy in every department and have placed new hands at work. A number of new clerks were also engaged to take care of the new business. John S. Broughton, president of the companies, states that business was never better. Many of the mechanics at the Globe plant were conscripted and new hands had to be broken in to fill their places.

The William R. Thropp & Sons Co., specialists in the manufacture of rubber machinery, recently suffered loss by a fire which started in one of the pattern storage departments and worked through the old buildings, built more than thirty years ago, eating out the floors and roof. Little damage was done the machinery, however, and no workmen were in the building at the time. The company is engaged in indirect war work and the fire is believed to have been of incendiary origin. The rebuilding of the burned portion is under way and is of fireproof construction. The building to be used for pattern storage in future will be of special design, and the machine shop will be separate. The company states that not all of its patterns were destroyed and that its work will be delayed only about six weeks.

The Zee Zee Rubber Co., Yardville, New Jersey, reports that it could not fill its orders if the plant was thrice the present size. "We have turned down about \$5,000,000 worth of business this year," said an official of the concern, "and will have to let other factories attend to it. We recently received an order from a concern in Minnesota to ship a carload of tires a week. We could not begin to fill the order and had to wire the firm to that effect. The only drawback we have is the shortage of coal. We have a fairly good supply of coal on hand, but if we had more fuel we would be able to operate the plant night and day in eight-hour shifts." The Zee Zee company recently completed its new addition and in this plant is able to manufacture 4,320 tubes every eight hours. The company has placed a new manager in charge of the Newark branch and also engaged new salesmen there.

The girl employees of the Zee Zee Rubber Co. held a dance and entertainment on April 23, and will devote the proceeds to the Trenton Chapter of the Red Cross. The dance was in charge of Miss Tillie Hollins, Miss Estelle Poet, Miss Mary

Scarborough, and Mrs. Charles A. Comp. The affair was held in the spacious office of the rubber company.

Filmore Drake, president of the Berrodin Rubber Co., Philadelphia, Pennsylvania, and Mrs. Ada Slack Cox, of Trenton, New Jersey, were recently married. Mr. and Mrs. Drake are now living at Overbrook, Pennsylvania.

Russell Jewett, employed in the tire making department of the Thermoid Rubber Co., recently enlisted in the Aviation Corps of the Navy and is now stationed at the training station at Charleston, South Carolina.

The Crescent Insulated Wire & Cable Co., Inc., is to erect a new building for office and storage purposes.

John A. Lambert, treasurer of the Acme Rubber Manufacturing Co., has been in Washington, District of Columbia, for a few days on a business trip.

NEWS FROM NAUGATUCK, CONNECTICUT.

By a Special Correspondent.

THE Goodyear's Metallic Rubber Shoe Co. houses its employees in structures of the so-called portable type, as was mentioned in our April issue. The illustration shows six of these, 12 by 42 feet, each with cemented basement and hot-air furnace. They are sheathed on the inside and provide comfortable and serviceable homes at a comparatively small cost. These houses are located on the site of the old reclaiming plant, Rubber avenue.

The company recently opened a cafeteria lunch and recreation room for its employees, where food is served at cost and an orchestra composed of employees plays during the noon hour three times a week. Space for dancing is also reserved.

The employment department of the Goodyear's Metallic Rubber Shoe Co. will be in charge of Richard M. Thompson, and will be located in what is now the sales room after alterations are completed.

The Goodyear's Metallic Rubber Shoe Co. is building a four-story concrete structure on Water street to serve as a central



HOUSING EMPLOYEES.

storage plant for both the Shoe and Glove companies. The basement will be used for grading, sorting and washing rubber, and the top floor for drying. The first floor will be devoted to compounding, mixing and operating sole calenders, while the second floor will be given over to heel presses, sole table, outsole cutting and similar work. The third floor will be used as a store-room for raw material. The building is 203 by 70 feet and is being constructed by the National Engineering Corp.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

RAW RUBBER.

THE talk of the moment, perhaps more among plantation shareholders than rubber manufacturers, is the three months' embargo on further shipments of rubber from the Straits and Malaya to Britain. It is hardly necessary to say that the government has taken this step to save freight space and because there was no national necessity to increase the stock in hand. Of course, the interest of the individual may suffer as has been the case in numberless other directions, but that cannot be, or at any rate is not being taken into account in this time of stress. Though the price of rubber has stiffened in England on account of this embargo and the imminent restricted output, a good deal of perturbation is felt as to the price of such sales as are imperative for financial reasons, that will have to be made to America, practically the only purchaser. Ceylon rubber is in a somewhat different position and this will probably continue to come forward, as it is a customary joint cargo with tea, the import of which, though it may be restricted, will not be stopped.

With regard to our imports of plantation rubber, it is hardly necessary to say that formerly it all came to London. For some little time, however, a certain amount has been coming to Liverpool and I notice that W. C. Bacon, the chairman, in his address to the shareholders of the Manchester ship canal at their annual meeting, said that rubber from the East figured in the new traffic dealt in at the port last year. Some discussion has been going on in our London contemporary on the tight packing of plantation rubber. It is a safe surmise that this matter has arisen through a desire to save space. Certainly sheets which were formerly easily separated by hand are now compressed practically into a solid block and require mechanical contrivances to separate them. This is more particularly the case with Smoked or Ribbed sheet and it is noticeable in the case of some plantations far more than in others. A remark made to me the other day in a rubber works was to the effect that a crowbar is now a necessity in a rubber storeroom.

THE PROOFING TRADE.

What with the large and varied demands made upon proofers in connection with government work, it is not surprising that the Waterproof Section of the India Rubber Manufacturers' Association is experiencing a strenuous time. There is general testimony in the branches of trade concerned to the utility of the section and to the hard work put in by Colonel Mandleberg, the chairman, and Mr. Wilson, the secretary. The main object of the section at its formation was collective, dealing with the wage demands of the work people. Of late, however, this matter has become of importance subsidiary to that of looking after the interests of the trade in the new situations which are constantly arising.

There is no important change to record. The rush on the proofing side has increased in intensity for government work, which means that the filling of overdue home and export orders on private account must still be relegated to the future. Despite the rush and the volume of work being turned out, it must be said that organization is much more complete than it was three years ago when rubber firms by means of a rubber stamp on their note-paper announced that they were controlled firms. The control which was initiated then has become much closer and more effective in the efflux of time. The actual method of procedure may indeed be left to the manufacturer's initiative and he also must bear the blame for defective work, but now his cloth is bought for him by a government official, orders by which he can obtain necessary chemicals are supplied to him,

and the working costs on which he bases his profit, excess or otherwise, must be available at any time for official scrutiny. This sort of thing is by no means peculiar to the rubber trade; it forms part of a general procedure which has won universal praise as tending not only to the highest efficiency, but also to important economies. It is understood that the direction of costings was decided on because of the great difference in the quotations sent in for certain proofing to be made to specification.

By a recent census which has been made of the proofing capacity of our various rubber works, great and small, the officials are in a position to know how long it would take to proof a certain number of yards of cloth, and if any particular work was urgent, a certain number of spreading machines could be commandeered to go on with the work at once and let less urgent work stand over. From what I hear in certain quarters, there is a tendency to develop proofing along non-rubber lines and a good deal of experimenting is in progress, having for its object the replacement of rubber by some other plastic material in the case of certain classes of proofed goods. Rubber is out of date, I was told the other day by the enthusiastic advocate of a new process. I replied that I would wait and see.

LEAD SHEATHING PROHIBITED.

The insulated wire industry has had many difficulties to contend with, the latest being the embargo on the use of lead as sheathing for fibrous cables. This ought to react favorably upon the use of the vulcanized rubber cables which, as pointed out by the Cable Makers' Association, should not be put into cast iron or other pipes, except for short lengths, unless they are armored.

GAS TRACTION.

The Automobile Association has offered a prize of £10,000 for the best invention with regard to the use of coal gas on motor cars and motorcycles. This must relate to an equivalent of two or three gallons of petrol and must have a running capacity of fifty miles at a single charge. The gas appliances are not to weigh more than 140 pounds and if let on hire, the charge is not to be more than £5 a year. London omnibuses will shortly be running on compressed gas in steel containers, which indicates that the rubber gas-bag is already in for severe competition.

EGYPTIAN COTTON.

The British Government has arranged to purchase the Egyptian cotton crop as from August 1, 1919, and a cotton control commission has been appointed to deal with the matter. One of the five members of the commission is K. P. Birley, second son of the late Arthur Birley, chairman of Charles Macintosh & Co., Limited, and brother of P. A. Birley, the present managing director. England has more spindles under Egyptian cotton than all the rest of the world put together and no doubt the Allies will have first call after home requirements are met. Concerns like the Dunlop Cotton Mills, near Manchester, use only the finest Egyptian cotton for their tire yarns. Lancashire approves of the movement as it will tend to stop speculation and also insure that the cotton will not come into enemy hands through neutral agencies.

ACTION OF CAUSTIC SODA ON RUBBER.

IN THE INDIA RUBBER WORLD, February 1, 1918, there was a paragraph entitled "Acceleration," in which I commented on the recent patent of D. F. Twiss and the Dunlop Rubber Co., Limited, for the use of caustic alkalis as accelerators, and I suggested that the views of other rubber chemists would be of interest. In response to this I have had a communication from W. R. Martin, of the Experimental Department of the North

British Rubber Co., Limited, works at Edinburgh. He draws my attention to the fact that the effect of caustic soda upon the rate of vulcanization of rubber was investigated at the North British works several years ago, a paper embodying some of the results having been read by himself at the Fourth International Rubber Congress, London, in 1914. This paper, entitled "The Effect of Acids and Alkalies on Rubber, More Especially in Relation to Reclaimed Rubber," was published in "The Rubber Industry," edited by Torrey and Manders, and subsequently appeared in "The India Rubber Journal." I regret to say that I quite overlooked this paper when I was writing on the patent of Dr. Twiss, and have now reread it with interest. As far as priority of publication goes, Mr. Martin certainly has it and his experiments show conclusively that caustic soda in small amount up to 0.5 per cent decidedly accelerates vulcanization, although in larger quantities it retards it. With 5 per cent the samples were not even half-cured in the ordinary time. In the experiment, care was taken to use mineral fillers which would not be acted upon by the alkali. The author's remarks on alkali-reclaimed rubber are of particular interest. He says that the very extensive sale testifies, of course, to its merits, but he asserts that it is practically impossible to wash out the last traces of alkali. With careful washing, he claims, samples of alkali-reclaimed rubber in the unvulcanized condition have contained as much as 0.5 per cent alkali, an amount which the experiment showed to constitute a decided accelerator. With regard to this, nothing is alleged against the reclaim containing the alkali, the drawback apparently being that the rubber manufacturer does not know whether it is there at all, or if there, in what amount, and so he cannot regulate his time of cure. It certainly is a fact that some proofers will buy only acid reclaims, but I have never heard any categorical statement that this preference is due to the fear of alkali in the rival product. Anyway, it would not count in the cold cure. Quite possibly the proofer's preference for the acid reclaim is due to the fact that, as Mr. Martin points out, the rubber contains most of its original free sulphur; in some cases, indeed, there is sufficient to effect vulcanization without further addition of sulphur. Mr. Martin's further remarks on acid reclaims and his experiments to show the effect of acid on vulcanization are of much interest, but do not legitimately come up for mention in this paragraph, which deals primarily with alkali, and whose main object is to correct any impression which the readers of my former paragraph may have gained that the effect of caustic soda upon the vulcanization of rubber was noticed for the first time by Dr. Twiss. In conclusion, I might mention that an article entitled "On the Action of Acids and Alkalies on Rubber" was published in the "Agricultural Bulletin of the Federated Malay States," Vol. 4, No. 6, and republished in "The India Rubber Journal," August 5, 1916, the author being B. J. Eaton.

TRADE NOTES.

The name "Galbulose" has been registered by Zama, Limited, for its special waterproofing compositions for textiles and leather goods. The Zama company has been carrying on a waterproofing business for some time at Pendleton, Manchester, the special formulas used being, it is understood, of American origin. Some Liverpool interests are now concerned in the business which has recently been extended. The registered office of the company is at 24 North John street, Liverpool. Besides special work, ordinary rubber waterproofing is carried on.

Since my recent reference to the change in ownership of the Revolite Co., Limited, Mr. Devereaux has given up the management and has been succeeded by A. J. Reed as general manager.

The Peerless Seamless Rubber Co., Limited, which is located at Richmond-on-Thames, has been purchased by Oylers, Limited, the makers of Skew tires. In addition to the specialties of

the original company, new lines will also be manufactured. The company was founded before the present era of "less" days as applied to food and drink and its title is in slavish adoption of a colloquialism.

Among the electrical and engineering firms that distinguished themselves during "Business Men's War Loan Week," was Callender's Cable & Construction Co., Limited. The employees of the Anchor Works, Leigh, set out to raise £10,000 towards the Leigh submarine.

The result was a total subscription of over £25,000, of which the firm contributed £7,345. The Mayor congratulated the Anchor Works on making the largest subscription in the town.

THE RUBBER INDUSTRY IN JAPAN.

By Our Regular Correspondent.

JAPANESE statistics for 1917 show an increase in imports of crude rubber over 1916 amounting to 1,763,003 pounds, value \$952,108, or 27 per cent in quantity and 26 per cent in value. This compares with the increase of 220 per cent in quantity and 210 per cent in value that the 1916 imports showed over those of 1915.

The larger imports of crude rubber were due to growing exports and home consumption, the latter being stimulated by the shortage of goods formerly obtained from foreign countries and now excluded from the local market by the war, and the expansion of the Japanese rubber industry.

IMPORTS OF CRUDE RUBBER.

From—	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
British India	1,334,337	\$743,582	1,616,131	\$988,285
Straits Settlements	4,648,894	2,484,147	6,185,567	3,142,527
Dutch East Indies	174,600	82,609	78,209	44,500
Great Britain	351,150	240,188	347,326	266,845
United States	92,248	67,415	123,301	101,211
Other countries	30,153	5,064	43,849	21,745
Totals	6,631,382	\$3,623,005	8,394,383	\$4,565,113

IMPORTS OF RUBBER MANUFACTURES.

	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Reclaimed and unvulcanized rubber	267,596	\$42,256	136,165	\$20,673
Dental rubber	21,570	49,975	19,953	49,477
Soft—rods and cords	111,399	47,792	84,610	42,727
Plates, sheets and tubes	221,904	71,052	250,012	86,648
Threads, strips, bands, }	63,128	86,584	44,786	62,914
Rings, washers	56,716	29,158	106,285	57,641
Other soft goods	19,921	16,151	49,140	27,680
Scrap rubber .....	.....	58,771	.....	137,657
Bicycle tires	7,779	10,460	2,756	2,673
Insulated electric wire—				
Armored submarine cables .....	.....	647,330	.....	.....
Other armored cables	4,494	796	11,312	1,492
Other insulated wires	26,335	10,755	45,845	23,962
Woven hose and belting	202,607	144,891	213,836	157,629
Waterproof tissue	15,808	13,212	14,184	12,957
Elastic webbings, cords and braids .....	.....	55,074	.....	50,642
Insulating tape	37,751	14,008	35,910	13,160
Totals .....	.....	\$1,298,265	.....	\$747,932

In addition to the above, automobiles and parts, including tires, were imported to the value of \$1,894,457, the number of automobiles being 860 in 1917, against 218 in 1916, while 877 bicycles entered the country in 1917, as compared with 1,354 the previous year; and boots, shoes, slippers, sandals, clogs and the like, of which rubber boots and overshoes formed the greater part, totaled \$32,614 and \$45,999 during 1917 and 1916, respectively.

These imports represent articles that the Japanese cannot make easily, economically, or well. Automobile tires of Japanese make are rather better than has been reported, although perhaps inferior to the best foreign goods, and are being exported to foreign countries, on trial. As Japanese bicycle tires are manufactured in excess of the demand, imports of foreign tires bear an assessed tariff of 40 per cent ad valorem, but superior or special goods that have become popular here and are registered at the Japanese Patent Office, were imported in small quantities.

As in the case of crude rubber, an increase was noted in the

Shanghai, China, imports of scrap rubber which advanced from \$58,771 in 1916, to \$137,657 in 1917, the totals for reclaimed rubber for the same periods were 267,596 pounds, valued at \$42,256, and 136,165 pounds, valued at \$20,673, respectively. This decrease was due to the shortage in ship tonnage owing to the war.

EXPORTS OF RUBBER GOODS.

	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Insulated wires	2,070,471	\$562,816	4,601,544	\$1,559,456
Rubber tires	2,789,632	2,038,139	2,901,633	2,021,815
Rubber toys and balloons.....	.....	.....	.....	307,115
Other rubber manufactures....	.....	333,985	.....	114,210
Totals .....	.....	\$2,934,940	.....	\$4,002,596

There were also exported 6,854 jinrikishas valued at \$144,752, in 1917, against 9,465 valued at \$170,743 in 1916, and bicycles and parts, exclusive of rubber tires, amounting to \$1,219,409, in 1917, as compared with \$806,815 in 1916.

In 1916, rubber nipples, poker chips and rubber toys were exported to Great Britain, the United States, Russia, and other countries, but the restriction of imports by Great Britain and the United States and the revolution in Russia have seriously affected this trade, although it is developing somewhat in the East, as the above statistics show. If America is to utilize most of her ships for military purposes, in the Atlantic, Japan's rubber trade will develop largely in the East.

NEWS OF THE TRADE.

Most Japanese rubber manufacturers paid semi-annual dividends for the latter half of 1917 at annual rates of 10 to 20 per cent, generally the former.

The Sanyo Rubber Co., established with a capital of \$7,500 at Ikeda, Kobe, is to manufacture tires.

The Tokio Rubber Co., Limited, has been established with a capital of \$50,000, one-fourth paid in, at Oshima-Mura, Tokio, and will manufacture rubber goods. Older Tokio concerns are the Tokio Rubber Works and Tokio Rubber Industry Co., Limited.

The Kanto Rubber Works, capitalized at \$90,000, has established itself at 2,000 Tabata, Tokio, and will manufacture rubber goods of various sorts.

The Osaka Kosho (Industry and Commerce) Co., Limited, Sumiyoshi, Hyogo, has been formed with a capital of \$500,000, one-fourth paid in, to manufacture and export glass and rubber goods to tropical countries.

The Chugoku Rubber Manufacturing Co., Limited, Hiroshima, has increased its capital to \$200,000, one-fourth paid in. It has purchased the plant of the Fukuyama Rubber Co., Fukuyama, Okayama, and established a branch factory.

JAPANESE RUBBER PLANTATIONS.

The area covered by Japanese rubber plantations in the Malay Peninsula, held by 125 men, is estimated at 93,803 acres, of which 51,166 acres are already planted and yield 344,000 pounds monthly.

The Okura Rubber Plantation Co., Limited, has rented 1,000 acres in Johore, of which 300 acres have been planted at a cost of \$50,000. In November the capital stock of the company was increased to \$250,000 so that the remaining 700 acres may be planted.

The Hanto (Peninsula) Rubber Enterprise Co., Limited, has been formed with a capital of \$500,000 to import crude rubber from a Chinese plantation of 1,500 acres in Johore, 500 acres of which are already planted. The office is at 4 Chome, Kitanagasa-Tori, Kobe.

The Shukudai Rubber Co., capitalized at \$150,000, one-fourth paid in, has been established at 1 Chome, Nihonbashi-Tori, Tokio, to grow rubber on its own plantation in Johore.

TWO EXHIBITIONS.

The Chemical Industrial Exhibition was held in Tokio from September 20 to November 20, 1917, and 23 rubber manufacturers exhibited their goods, occupying one-tenth of the floor space of the entire exhibition. This exhibition was the first of

its kind in Japan and was considered a complete success. The Emperor and Empress, the Crown Prince, and other members of the imperial family were present.

At the Osaka Commercial Exhibition, held from November 1 to December 10, 37 rubber makers and traders in Osaka exhibited 5,700 pieces of rubber goods.

ECHOES FROM THE GERMAN RUBBER INDUSTRY.

PAPER BELTING.

AS is well known, the Germans have been manufacturing various textiles of paper. The latest use to which this material has been put is in the production of belting which, owing to lack of supplies, can no longer be made of leather, balata, rubber, cotton or hair.

The method of making this new belting is as follows:

Paper is cut by machinery into fine strips, which are twisted into yarns. These are usually woven, occasionally knitted and plaited, into belts of two kinds—paper cloth belts and paper yarn belts. The former are more generally used and are prepared by cutting breadths about 40 inches long from the woven material and folding them together according to the width and thickness desired on the inner side. To give special tenacity, a nucleus is inserted of cotton, woven wire, or a new material of which the warp consists of alternating strands of wire and paper threads. It is claimed that this belting is flexible, has good transmitting power and does not stretch as much as a similar belt without a core.

RUBBER MARKETS OF THE FUTURE.

The "Deutsche Orient-Korrespondenz," a German publication, delivers itself of some interesting opinions regarding the future rubber markets of the world.

With no small amount of satisfaction it points out the decline of the London rubber market, which is shown by the fact that whereas more than half the world's output went to London during 1914 and 1915, the 1916 figures barely account for 44 per cent.

The chief factor contributing to this condition was the establishment of direct trade between America and rubber-producing centers. The War Taxation Enactment, passed in the Federated Malay States in 1917, claims the German paper, was directed against the American rubber policy.

Furthermore, we are informed that Singapore owes much of its importance to Japan; Japanese capital is also active in Java where large plantations have already been acquired. The Japanese Kuhara Mining Co., which owns a 2,550-acre rubber estate of five-year-old trees in Borneo, is preparing to extend its activities and exploit vast plantations throughout the Netherlands East Indies.

Of course, neither Germany nor France is going to allow England to monopolize the rubber trade after the war; these two nations will most energetically promote the cultivation of rubber in their own colonies so as to be quite independent of England for this commodity.

The ports of Havre, Antwerp and Hamburg are to be considered as possible European rivals of London. France will naturally make it her duty to reinstate the Havre market. The importance of Antwerp will depend entirely on the political and economic condition of Belgium after the war, and incidentally of Belgian Congo. Finally, enlightened by experience, Germany will establish a large rubber market at Hamburg, concludes our informant.

After what has been hinted concerning Japan's activities in the Dutch East Indies, it would be superfluous to say anything about the Holland markets, Amsterdam and Rotterdam.

If you can't put the "T" in "Fight," you can at least put the "Pay" in "Patriotism" by buying Liberty bonds.

THE SITUATION IN MALAYA.

By Our Regular Correspondent,

RUBBER CROP RESTRICTION.

THE proposal of the Rubber Growers' Association to reduce the output of rubber to 20 per cent below that of last year has been received with mixed feelings.

A letter to the "Straits Times," by A. B. Milne, seems to express the opinion of a good many planters, who are inclined to consider that the majority of companies not only will lose very little by the restriction, but ought even to profit by having this opportunity to pay more attention to the sanitation of estates and to rest older and overtapped trees—circumstances which should stimulate patriotism not a little and enable the planting community to make the projected sacrifice with the utmost cheerfulness.

Others are not quite so optimistic and point out labor disturbances likely to occur by endeavoring to put tapping coolies on general estate work, as a smaller output would call for fewer tappers, and these, being skilled workmen, would not be found ready to do eight hours' work with an axe for the same—or less—amount of money they earned previously by tapping from four to five hours. Furthermore, it is foreseen that this artificial curtailment of production will send prices up, with the consequence that native owners, who are very hard to control, will increase their output as much as they can.

Finally, the "Straits Times" declares:

There is, at present, no evidence that the government wishes rubber output reduced, and until the wish is expressed it may be playing the game of the enemy rather than of the Empire to tamper with production of this important war material.

RUBBER LANDS (RESTRICTION) ENACTMENT.

When this bill was introduced in July, 1917, to safeguard British interests, it was wholeheartedly supported by the majority of Malayan planters. It has, however, been discovered that the enactment conflicts with treaty engagements of Great Britain, under which the subject of any foreign power which was a party to the engagements was given the same right to acquire property within the British Empire as a British subject.

Now by the above enactment, a British subject is allowed to acquire rubber lands within the British Empire while a foreigner is not permitted to do so; therefore, if the treaties are to be respected the British subject must be prohibited as well as the foreigner. Consequently an amendment has been passed by the local legislative council, placing British subjects on a par with foreigners so far as their position with regard to acquiring rubber lands is concerned.

As may be imagined the amending bill has caused considerable commotion and protests have come in from various quarters, although it was pointed out in council that the bill removed all restrictions upon the sale of mortgaged lands, provided the mortgage had been created before December 21, 1917.

A further attempt to advance British interests is the clause providing that any corporation in treaty with another corporation or with any person on December 21, 1917, for the purchase of rubber lands would be authorized to purchase these lands if the corporation could satisfy the governor that the nationality of 95 per cent of the holders of the capital of the purchaser corporation was the same as that of 95 per cent of the holders of capital of the vendor corporation, or in the case of persons if they were of the same nationality.

That the British are especially favored by this provision is obvious when it is considered that they form the great majority of the population interested.

Local sentiment on the subject may best be judged from the following telegram sent to the Secretary of State:

Joint meeting representatives Planters' Association, Malaya, Federated Malay States' Chamber Commerce, Selangor Chinese Chamber Commerce, Federated Malay States Bar Committee, held to-day, unanimously urge repeal Rubber Lands Restriction Enactment, 1917, in view of intention pass Amendment Bill

which would have general disastrous economic effects throughout Peninsula. Suggest, if necessary, substituting Enactment prohibiting further alienation of State land for cultivation of rubber, thus main object original Enactment attained without infringement Treaty Rights.

PROSPECTS OF THE RUBBER INDUSTRY.

At a recent general meeting of the Rubber Plantations' Investment Trust, Limited, George Croll considered the outlook of the rubber industry. In the course of his speech he said that he did not think undue anxiety should be felt on account of pests and diseases—largely the outcome of the rush to plant in the boom years.

The acreage planted throughout the Middle East is approximately 2,000,000 acres, he declared, and if the ultimate yield of rubber planted on this area were rated at an average of 400 pounds per acre, the output from 2,000,000 acres by, say, 1923 would amount to 357,000 tons. Consumption would keep up with the production because during the period of reconstruction after the war, land transport would be an important factor and larger numbers of rubber-tired motor vehicles would be required than ever before. Furthermore, rubber has become a practical necessity in a great many other directions.

At the present time America consumes about 3.25 pounds of rubber per capita. If Europe and America consumed only 1.35 pounds per capita the whole of the estimated ultimate output of 357,000 tons from the present planted area in the Middle East would be absorbed plus about 50,000 tons of wild rubber—not considering the needs of all the other countries of the world.

CAPITAL IN BRITISH MALAYAN RUBBER PLANTATIONS.

It is estimated that the approximate amount of capital now invested in rubber production alone in British Malaya is \$166,000,000 gold. Of this total, \$160,000,000 represents British capital; \$1,500,000, United States; \$4,500,000, capital of other nationality.

BRITISH MALAYAN RUBBER PLANTATIONS.

It is now possible, from data supplied by L. Lewton-Brain, Director of Agriculture, Federated Malay States, to give complete comparative statistics of the rubber industry in the whole of British Malaya for 1915 and 1916, supplementing recently published statistics of the Malay States only. The latest figures relate to the rubber estates in the Straits Settlements, and include estates over 100 acres in extent in Province Wellesley, the Dindings, Singapore, Penang and Malacca. They are as follows:

	1915.	1916.
Number of estates.....	203	212
Acreage in possession.....	230,707	247,569
Acreage planted	129,534	145,139
Acreage producing	66,143	88,436
Newly planted	4,200	7,056

For the whole of British Malaya, the comparative statistics are as follows:

	1915.	1916.
Number of estates.....	1,401	1,475
Acreage in possession.....	1,750,254	1,852,736
Acreage planted	833,069	951,870
Acreage producing	413,893	543,556
Newly planted	50,049	60,308

It will be seen from these figures that, in spite of suggestions to curtail the planting of new areas and thereby contribute to the reduction of output, there was substantial expansion during 1916, and it will be interesting to see from the 1917 statistics whether this tendency will have been maintained in face of last year's difficulty in getting tonnage to transport the rubber. In 1917, the export of rubber from the Federated Malay States alone was in the neighborhood of 80,000 tons, whereas in 1909 the total from the whole of the Malay Peninsula was only 3,340 tons. Malacca produced 6,606 tons in 1916 and Province Wellesley 3,912 tons.

There were 46,119 laborers employed on the Straits Settlements estates in 1916, against 44,059 in the previous year. Added to the figures for the Federated and other Malay States this gives a total of estate laborers in British Malaya in 1916 of 326,431 compared with 281,438 in the previous year.

THE SITUATION IN DUTCH GUIANA.

By Our Regular Correspondent.

THE balata returns for 1917 show a slight increase in production over that of 1916. In 1916 the production was 910,417 kilograms, while last year it amounted to 1,034,211 kilograms. These figures show the balata industry to be continuing in a prosperous condition, and in view of the increased importance of this product, the current year should see even a greater boom.

The Nickerie district contributed largely to last year's crop, and it is said on the best authority that the returns for 1918 will exceed all past ones from this little place.

Although the market price of balata during the year 1917 was not entirely satisfactory, still, on the whole, the enterprise was remunerative to those interested. The local prices were in keeping with the times and throughout almost the entire year three florins (\$1.206) per kilogram were obtained.

From some quarters have come reports that among several parcels of balata arriving from the bush there have been found many hundreds of kilos of false, or what is locally called bastar-

matter, and gutta. It was found that in many samples from the Marowynne district, water varied from 2.5 to 7.1 per cent, resin from 36.4 to 39.6 per cent, crude proteids from 2.6 to 6.3 per cent, mineral matters from 5 to 1.1 per cent, while the gutta varied from 40.1 to 52.1 per cent. From these results the deductions were that normal balata should contain 45 per cent of gutta and 38 per cent of resin, any proportion of the latter above 38 per cent being regarded as an impurity. It was assumed that on the water-free basis less than 44 per cent, or total impurities in excess of 15 per cent, indicate, as the case may be, either low-grade balata, such as dabray bottoms, or admixture with latex other than that of true balata.

Quite a number of expeditions left Paramaribo for the "bush" at the beginning of the year, and as the weather is all that can be desired for tapping operations, should make a big clean up from this time on to the end of the season. A record year is looked for.

A FAMINE THREATENED.

Despite the bright prospects, great fear is entertained in some quarters that in the event of the United States stopping the export of provisions, activities will suffer materially. All, or nearly all, the provisions imported into the colony find their way into the bush. When one remembers that balata bleeding here engages between 4,000 and 5,000 men who have to depend on such things as flour, rice, beef, pork, oil, etc., to be able to live, then the situation does appear to be serious. We depend on the United States for all we consume and cannot exist on the few bunches of plantains and the small amount of ground provisions that come in from the various districts. Rice, the staple food, cannot be had. The Government has tried to secure a supply from British Guiana, but so far has been unsuccessful.

With famine threatening, everything has gone up in price nearly 200 per cent. Cassava bread, which formerly sold at one Dutch cent a cake, is now fetching five cents, and there is every chance of the price increasing before this letter is printed.

Besides the balata men in the bush, there are the great numbers of hands employed by the sugar, cocoa, coffee, and plantain estates, who must be fed, but there is nothing to feed them with. It is to be hoped, at least, that the authorities at Washington will reconsider their proposed stoppage of provisions to the colony, for should the threat be carried out, it will mean death to Dutch Guiana.

RUBBER PLANTING PROGRESSES.

The rubber planting industry is progressing slowly, but steadily, despite the many disappointments usually experienced in these parts of the world.

Fortunately no new serious insect pests were remarked and the leaf disease appears to have entirely disappeared, during the past year, which is very fortunate indeed for the future outlook.

It is interesting to remark that rubber growing in Dutch Guiana has now passed the experimental stage, as is shown by the healthy, robust trees on some of the plantations. What is now required is substantial capital and the necessary labor to place the undertaking on a firm and successful basis. On several estates it is a pleasure to see the trees. For size and robustness they would compare favorably with any on the long-established rubber estates in the Far East.

The yield per tree is also a very important factor when it is taken into consideration that Surinam began rubber growing only a few years back. On the whole, it can be reported that the yield on all the estates in the colony is very good, and high hopes are entertained for brilliant results when the great world-war comes to an end. The war has materially hindered the rubber industry in many ways. For instance, several growers had to cease tapping operations as there was no market for the product, and to-day it would be difficult to buy a kilo of raw rubber in Paramaribo, owing to the strict regulations enforced by the authorities in connection with rubber export. But when the war is ended, the balata and rubber industries of Dutch Guiana will be able to compete with the best of their kind in any land.



THE BALATA BLEEDER ASCENDING THE TREE BY MEANS OF SPURS, BEING SUPPORTED BY A ROPE SLING.

balata. This was due to dishonesty on the part of some of the bleeders who, to secure big earnings, were tempted to adulterate the product with spurious stuff and try to palm it off on their masters. It need hardly be said that they were severely punished and, in many instances, the entire amount of their earnings was stopped.

The Government Department of Forestry has taken measures to prevent this illicit trade and in an article published in the "Landbouwkundig Tydschrift" for Surinam and Curaçao, the Inspector of Forests deals at length with the matter and puts forward some sound advice to those interested in the industry.

COMPOSITION OF SURINAM BALATA.

In connection with the above, it is of the utmost importance to know that experiments have been conducted recently to determine the composition of Surinam balata, about which little appears to have been reported. Samples from several concessions were submitted to analysis, determinations being made of moisture, resin, crude proteids, other vegetable impurities, mineral

BRAZILIAN NOTES.

AMAZONIA'S clamoring for the valorization of rubber has been answered—the Federal Government has authorized the Banco do Brazil to buy rubber for its account, which circumstance might have been expected to produce the much desired favorable change in the local market. But subsequent events have disappointed believers in valorization and there is much interchange of bitter accusations and base insinuations between Para on one side and Manaus and Matto Grosso on the other, while the three parties unanimously decry the incompetency of the agents of the Banco do Brazil.

The "Jornal do Commercio" recently published an enlightening letter sent by Coronel Leopoldo de Mattos, fiscal delegate of Matto Grosso, to Federal Senator Antonio Azeredo.

The writer claims that while the Banco do Brazil buys Acre fine at 4\$000 per kilogram, the offer for Amazonas and Matto Grosso Upriver fine was only 3\$600, and for the Downriver grade, 3\$400. The Matto Grosso agency of the bank claims to be acting according to instructions.

Exporters, it is further stated, follow the bank's example and offer the same prices, although some bid 50 reis more for the Downriver product.

This state of affairs is arousing much ill feeling towards the Federal Government whose action, far from protecting rubber, is assisting in its further depreciation. The Governor of Amazonas has reduced the tax on rubber, but without any profit accruing therefrom, owing to the attitude of the Banco do Brazil, whose Belem, Para, branch is accused of furthering local interests to the disadvantage of Manaus.

The letter ends with the demand that measures be taken against the bank policy which is contrary to the provisions formulated by the president of the Republic.

A telegram, echoing these expressions, has also been sent by the Associação Commercial to Colonel Hannibal Porto, its delegate at Rio de Janeiro.

The Para agent of the bank seems to have adopted the following method of proceeding:

Exporters make their bids to the auditors and they bring them over to the official agent, who invariably caps the highest bid by 50 reis. Since the bank's offer is always subject to many irksome conditions never put forward by the exporters, and the manager further has instructions to reject all grades other than Fine, it is often in the interest of the seller to close the deal with an exporter.

Local papers all agree that the persons sent by the Banco do Brazil to handle the matter, are absolutely ignorant of even the simplest thing concerning rubber; they have no place in which to receive or classify their purchases, which, by the way, have not been very extensive, probably owing to the fear of being "taken in."

"A Folha do Norte" claims that the *valorisador's* rejection of the lower federal grades, and also of the Peruvian, Bolivian or Matto Grosso qualities, has caused these to depreciate and to be bought up by speculators. As an instance of the working of the bank's methods, the paper cites the following actual occurrence:

On a Saturday morning 26,000 kilos of rubber arrived at Para. The Banco do Brazil bought 8,000 kilos, the largest lot of Fine that had come in, at the rate of 2\$400 for Islands Fine and 2\$600 for Caviana. The remaining 18,000 kilos came into the hands of the exporters at 2\$200 and 2\$300, respectively.

In connection with the above, it is interesting to note that while the total amount of Fine shipped to America is less than the total of the lower grades, the reverse is true of the shipments to Europe. Thus during the first nine months of 1917, shipments of Amazonian, Peruvian, and Bolivian rubber to New York aggregated 20,012 tons, out of which 7,625 tons were Fine;

during the same period 6,509 tons of Fine out of a total of 9,967 tons were received in Europe.

Meanwhile, although prices rose, business, both in Manaus and Para, is dull. Stocks are still accumulating, and everybody is blaming everybody else for the mess things are in.

MONTHLY SERVICE DIRECT FROM MANAOS TO LIVERPOOL.

A motion on the part of the Minister of Commerce, to relieve the critical situation at Manaus, and one that will probably do more good than valorization, is that asking the Lloyd Brasileiro to commence a monthly service direct from Manaus to Liverpool. This service will continue until the Amazon rubber has been cleared off and conditions are improved.

Prior to this, the Federal Government had instructed Brazilian steamers on their way to the United States to call at Manaus. But this plan did not work very well, as the American market could not absorb the extra rubber from Manaus.

PREFERENTIAL TARIFFS FOR THE UNITED STATES.

The budget law of Brazil for 1918 maintains the preference tariffs on certain importations from the United States and a reduction of 20 per cent on the general rate of duty is granted on articles made of rubber.

THE RUBBER EXPORT DUTY.

It has been found that the rates quoted in the November 1, 1917, issue of THE INDIA RUBBER WORLD, as being fixed by the Chamber of Deputies of Para, on September 14, 1917, are almost exactly the same as were adopted in the State of Para by a law of November 6, 1913. According to that law, *Hevea* Fine, in sheets or refined, was subject to a tax of 18 per cent ad valorem; Fine or Medium-fine *Hevea*, smoked or coagulated, by any other process, and sernamby or caucho, were dutiable at 19½ per cent; washed sernamby and caucho, at 18 per cent, and other kinds, at 25 per cent ad valorem.

In addition to these duties, a tax of 1 per cent ad valorem was collected by the municipality of Para on rubber of the state in any form. The export duties in other Brazilian states are somewhat lower.

CERTIFICATES OF ORIGIN FROM THE ACRE FRONTIERS.

According to a circular of the Brazilian Minister of Finance, dated March 6, 1918, clearance will not be granted for the exportation from the Acre frontiers of rubber of Brazilian, Bolivian, or Peruvian origin, unless accompanied by a certificate of origin. When the rubber is of Bolivian or Peruvian origin, these certificates will be supplied by the Brazilian consular officers at the port of shipment, or, in case there is no such official at that point, by the customs agent of that port or by the customs agent at the first port at which the ship carrying the rubber shall touch on the way to its destination. When the rubber is of Brazilian origin, the certificates will be issued by the customs agent of the district in which the rubber was produced.

To obtain such certificates, an owner of a rubber forest must register with the consulate or customs agency, giving the name of the firm, as well as the names of the members of the firm authorized to sign for it, and the name and location of the rubber forest. The information thus obtained is to be used in the compilation of export statistics.

J. A. MENDES & CO.

The new exporting firm of J. A. Mendes & Co., Manaus, is in no way connected with the house of J. Marques & Co., of Para, J. A. Mendes having retired from that firm to form the new company, notice of which appeared in THE INDIA RUBBER WORLD, December 1, 1917.

MEXICAN CHICLE EXPORTS TO THE UNITED STATES.

During 1917, the quantity and value of chicle invoiced at the American Consulate at Progreso, Mexico, for the United States amounted to 1,133,017 and \$485,028, respectively.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED MARCH 5, 1918.

- N**O. 1,258,052. Knee cap or cover. W. T. Stall, assignor to W. T. Stall and C. H. Dean, doing business as copartners under the firm name of Stall & Dean Manufacturing Co.—all of Brockton, Massachusetts.
- 1,258,056. Method of making tire-casing carcasses. W. C. Stevens, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,258,063. Demountable rim. J. H. Wagenhorst, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.
- 1,258,073. Hose coupling with rubber sleeve. A. H. Wolfe, Massenz, New York.
- 1,258,121. Reliner and the method of manufacture. W. Kearns, assignor to Morgan & Wright—both of Detroit, Michigan.
- 1,258,204. Pneumatic tire. J. Egy, Parker, Kansas.
- 1,258,347. Tire. L. McKinnon, Ogden, Utah, assignor to Universal Airless Auto Tire Co., Butte, Montana.
- 1,258,458. Fountain pen. H. P. Ravn, Waterloo, Iowa.
- 1,258,461. Securing tires on the wheels of road vehicles. R. Reid, Glasgow, Scotland.
- 1,258,470. Novelty card or frame with shutter device operated by elastic cord. Louis Schissel, Brooklyn, New York.
- 1,258,505. Pneumatic tire. H. B. Wallace, St. Louis, Missouri.
- 1,258,506. Method of making tires. H. B. Wallace, St. Louis, Missouri.
- 1,258,522. Wheel tire. A. M. Bangs, New York City.
- 1,258,573. Automobile cushion wheel. S. Johnstone, St. Catharines, Ontario, Canada.
- 1,258,593. Fountain pen. F. W. Miller, Bethel, Missouri.
- 1,258,615. Tire. G. F. Fisher, Roselle, New Jersey, assignor to Morgan & Wright, Detroit, Michigan.
- 1,258,617. Head band. L. A. Fritsch, Fort Thomas, Kentucky, assignor to Ohio Truss Co., Cincinnati, Ohio.
- 1,258,618. Truss. L. A. Fritsch, assignor to Ohio Truss Co.—both of Cincinnati, Ohio.

ISSUED MARCH 12, 1918.

- 1,258,676. Clamping mechanism for demountable rims. A. Hargraves, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,258,766. Nipple protector. J. A. Gullery, Brooklyn, New York.
- 1,258,780. Tire armor. I. L. Joslyn, Terre Haute, Indiana.
- 1,258,863. Non-skid vehicle tire. O. E. Brown, Buffalo, New York.
- 1,258,879. Tire. H. J. Dawson, Birmingham, Alabama.
- 1,258,880. Stopper for hot-water bottles and other rubber vessels. H. D. Dean, Providence, Rhode Island.
- 1,258,968. Resilient tire construction and wheel equipment. J. S. Williams, Riverton, New Jersey.
- 1,258,979. Apparatus for use in the treatment of piles. H. L. Beard, Quincy, Illinois.
- 1,259,009. Rubber-tired vehicle wheel. F. A. Frommann, Chicago, Illinois.
- 1,259,106. Life preserver. J. B. and M. Kasser—both of San Francisco, California.
- 1,259,108. Wheel rim for pneumatic tires. R. B. Kepp, Neoga, Illinois.
- 1,259,117. Wind shield weather strip. A. L. McCormick, Louisville, Kentucky.
- 1,259,201. Combined submersible boat and diving apparatus, with rubber sleeves and legs. W. R. Farringer, Grand Junction, Colorado, assignor by direct and mesne assignments to the Submersible Boat Co., a corporation of Colorado.
- 1,259,212. Tire rim tool. W. H. Copping, Pasadena, California.
- 1,259,256. Tire for automobiles, etc. P. J. Maillard, Jeanerette, Louisiana.
- 1,259,289. Cord tire and method of manufacture. I. R. Renner, Akron, Ohio, assignor to the B. F. Goodrich Co., New York City.
- 1,259,290. Vehicle wheel tire filler. E. T. Reynolds, Brooklyn, New York.
- 1,259,344. Submarine cable. E. W. Beardsley, San Francisco, and P. W. Ham, Oakland—both in California.
- 1,259,423. Hose coupling. T. J. Madigan, assignor to Madigan Manufacturing Co., Inc.—both of New York City.
- 1,259,424. Resilient wheel. N. Malman, San Francisco, California.
- 1,259,425. Tire protector. W. Mautner, New York City.

ISSUED MARCH 10, 1918.

- 1,259,655. Resilient tire. N. J. and F. Mooney—both of San Francisco, California.
- 1,259,689. Anti-slipping device for rubber boots or shoes. C. H. Waterman, assignor of one-half to D. A. Gregory—both of Priest River, Idaho.
- 1,259,748. Non-inflatable resilient tire. B. F. Johnston and W. B. Mowbray—both of Ogden, Utah.
- 1,259,776. Tire chain and armor. W. J. Putnam, Deposit, New York.
- 1,259,856. Pneumatic tire protector. E. Haas, San Antonio, Texas.
- 1,259,974. Detachable rim. V. N. Gingrich, Hershey, Pennsylvania.
- 1,259,978. Life belt. M. Halperin, Brooklyn, New York.
- 1,260,029. Vehicle wheel. H. M. Lambert, Portland, Oregon, assignor to O. A. Shaw, Oakland, California.

- 1,260,066. Tire casing spring. C. L. Sackrider, Battle Creek, Michigan.
- 1,260,146. Road vehicle wheel including twin pneumatic tires. S. H. Cope, assignor to the Warland Dual Rim Co., Limited—both of Birmingham, England.
- 1,260,152. Nipple comprising a hard rubber tube and a metallic coupling. M. V. Crocker, Newton Upper Falls, Massachusetts.
- 1,260,155. Vehicle tire. G. W. Deatrich, Sr., Pottsville, Pennsylvania.
- 1,260,165. Self filler lever pen. W. F. Duryea, Hackensack, New Jersey, assignor to Salz Bros., New York City.
- 1,260,166. Wheel tire. J. C. Eakens, Mingo Junction, assignor of one-half to E. C. Brandfoss, Steubenville—both in Ohio.
- 1,260,186. Non-puncturable inner lining for automobile tires. C. S. Goodfellow, Jersey City, New Jersey.
- 1,260,284. Spring-cushion-tired wheel. J. E. Bennett, Momence, Illinois.

THE UNITED KINGDOM.

ISSUED MARCH 13, 1918.

- 112,501. Compound fabric for stair-treads, tires, belts, soles and heels. H. Frood, Sovereign Mills, Chapel-en-le-Frith, Derbyshire.
- 112,586. Tire valve. I. W. Cole, 1314 South avenue, and R. B. Chamberlain, 1322 South avenue—both of Plainfield, New Jersey, U. S. A.
- 112,622. Wheel tire composed of tensioned steel bands with a rubber cover inside the tread. Roger Alfred, Baron of Mauni, Chateau du Bosquet, Bourg-Achard, Eure, France.
- 112,638. Sewing machine attachment for inserting elastic in the waist band or hem of a garment. J. P. Weis, 294 South Broadway, Nyack, New York, U. S. A.
- 112,645. Sewing machine attachment for inserting elastic in the waist band or hem of a garment. W. P. Thompson, 6 Lord street, Liverpool. (Union Special Machine Co., Chicago, Illinois, U. S. A.)
- ISSUED MARCH 20, 1918.
- 112,737. Reservoir pen. G. W. and A. C. Heath, 206 First street, Newark, New Jersey, U. S. A.
- 112,751. Valve comprising a loose rubber ball. C. Coney, 1 Chichester Villas, East Betchington, Seaford, Sussex.
- 112,788. Driver's or smoke helmet. R. H. Davis, 187 Westminster Bridge Road, London.
- 112,812. Surgical splint provided with thrust piece of elastic tubing. R. Williams, Barnet War Hospital, High Barnet, Hertfordshire.
- 112,826. Syringe. L. L. Stevenson, 528 Commercial street, Emporia, Kansas, U. S. A.
- 112,855. Spring wheel with rubber cushion and metal tread blocks. I. Pascal, 1210 St. Urbain street; M. L. Rosenthal, 58 Dorchester street West, and B. Levee, 37 Mayor street—all in Montreal, Canada.
- 112,860. Artificial teeth employing rubber as a vulcanizing flux. N. Cohen, Lowland Villa, Wellington street, and F. Bowerman, 216 County Road—both in Swindon.

ISSUED MARCH 27, 1918.

- 112,936. Artificial limb with elastic cords. Ryder Artificial Limb Corp., 219 East 34th street, New York City, U. S. A.
- 112,941. Artificial limb, employing india rubber disk. A. P. Mauduit-Déo, Bouscat, Gironde, France.
- 113,018. Studded wheel tire. J. Briggs, Wyresdale, Hollings Hill, Esholt, Shipley, Yorkshire.

ISSUED APRIL 4, 1918.

- 113,082. Reservoir pens. D. Cameron, Waverley Works, Blaire street, Edinburgh.
- 113,129. Tire tread comprising sets of steel-studded portions and plain rubber portions. W. C. Platts and Gofa Tyre Co., 3 Newmarket street, Skipton, Yorkshire.
- 113,174. Inflatable life-saving garment. R. J. Kee, 276 Reneesvalles avenue, Toronto, Ontario, Canada.
- 113,177. Surgical paraffin spray comprising an air bulb. A. Maslof, 201 High street, Harlesden, London.

THE DOMINION OF CANADA.

ISSUED DECEMBER 31, 1917.

- 180,752. Automobile cushion wheel. S. Johnstone, St. Catharines, Ontario.
- 180,760. Fountain syringe combined with a pressure frame. J. B. A. Le Jeunesse, Alameda, California, U. S. A.
- 180,775. Weather strip for wind shields. A. L. McCormick, Louisville, Kentucky, U. S. A.
- 180,779. Inner tube. E. M. Pearson, Chicago, Illinois, U. S. A.
- 180,891. Soft rubber pad for shoe heels. E. S. Helwitz, New York City.
- 180,922. Wheel rim mechanism. D. J. Raymond, Cleveland, Ohio, U. S. A.
- 180,924. Abdominal support. M. B. Rider, Muscatine, Iowa, U. S. A.
- 180,938. Corset. M. Shaw, Chicago, Illinois, U. S. A.
- 181,033. Galosh. J. W. Gannon, Mangaweka, New Zealand.
- 181,051. Wheel rim for pneumatic tires. F. P. Johnson, Danville, Pennsylvania, U. S. A.
- 181,091. Rubber heel grip. W. Scholl, Chicago, Illinois, U. S. A.
- 181,092. Rubber heel. W. M. Scholl, Chicago, Illinois, U. S. A.
- 181,188. Leak alarm for pneumatic tires. E. J. F. Quirin, Tioga Center, and G. A. Payne, Buffalo, coinventors—both in New York, U. S. A.

- 181,193. Tire leak signal. J. P. Sternhagen, Glasgow, Montana, assignee of D. D. Getman, Minneapolis, Minnesota—both in the U. S. A.
 181,214. Demountable rim. H. N. Carragher, Fall River, Massachusetts, U. S. A.
 181,237. Solid tire comprising an elastic embedment for resilient filling of unsplit cane. A. Geering, New York City, U. S. A.
 181,242. Vehicle wheel having a pneumatic tire. G. C. Hanna, Plainfield, Indiana, U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- 485,402. (May 9, 1917.) Improvements in non-skid devices. Neverskid Manufacturing Co.
 485,425. (May 10, 1917.) Arrangement of core or filling body for rubber tires. E. A. Sprague.
 485,460. (May 14, 1917.) Non-skid chains. C. R. Standley.
 485,467. (May 14, 1917.) Improvements in rubber heel-pads. E. S. Helwitz.
 485,479. (May 15, 1917.) Improvements in vehicle wheels. T. J. Lindsay.
 485,501. (May 18, 1917.) Non-skid tread. M. Pirot and J. Zimmermann.
 485,603. (May 23, 1917.) Improvements in elastic wheels. J. Pursel, H. and W. Neumann.

NEW ZEALAND.

ISSUED FEBRUARY 21, 1918.

- 39,604. Galoshes. J. W. Gannon, Mangaweka, New Zealand.

TRADE MARKS.

THE UNITED STATES.

- 92,681. A red X—boots and shoes of rubber and fabric. Converse Rubber Shoe Co., Malden, Massachusetts.
 102,250. The word DELIGHT—men's garters. Crescent Garter Co., New York City.
 102,355. The word TRIUMPH—hot water bottles, fountain and bulb syringes, ear syringes, infants' syringes, breast pumps and ice bags. J. Schmid, Inc., New York City.
 102,358. The word HARVATAN—household rubber gloves. J. Schmid, Inc., New York City.
 102,734. Representation of the letter C repeated on two horizontal lines, but reversed on the first line—rubber tires. Cupples Company Manufacturers, St. Louis, Missouri.
 106,143. The words KARNS' ROW SPRING—valve cups formed of rubberized fabric. Parker Cup & Specialty Works, Inc., Parkers Landing, Pennsylvania.
 106,487. Conventional design composed of downward pointing arrows forming a shield bearing the word MOHAWK—rubber tires. The Mohawk Rubber Co., Akron, Ohio.
 107,056. The word FALCON—golf balls. The North British Rubber Co., Limited, Edinburgh, Scotland.
 107,086. The word SKOOKUM, with a conventionalized face within the central letter O and a feather above the word—chewing gum, etc. G. Borgfeldt & Co., New York City.
 107,535. Representation of a man's foot wearing a rubber-soled shoe—rubber soles for boots and shoes. O'Sullivan Rubber Co., Portland, Maine, and New York City.
 108,369. The word LATEX—pneumatic rubber tires. The Batavia Rubber Co., Batavia, New York.
 108,610. The word DARCOID—rubber hose, rubber belting and asbestos packing. Dominion Asbestos and Rubber Corp., New York City.
 108,619. The word MANDOR—belting made partly of fabric and partly of rubber. The Manhattan Rubber Manufacturing Co., New York City.
 108,772. The word NU-E-PA—dress shields. I. B. Kleinert Rubber Co., New York City.

THE UNITED KINGDOM.

- 376,333. The word STANWAL—all goods included in Class 40. Standard Woven Fabric Co., South street, Walpole, Norfolk County, Massachusetts, U. S. A.
 378,438. Representation of three deer in a group above which appear the Chinese characters for E. WO YANG HONG (Pleasant Harmony Foreign Firm)—balata machine belting. Matheson & Co., Limited, 3 Lombard street, London, E. C. 3.
 381,289. The word NÉOLIN—articles of clothing. The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio, U. S. A.
 381,290. The word NÉOLIN—goods manufactured from india rubber and gutta percha, not included in other classes. The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio, U. S. A.
 380,597. The words SHELLAC STORM PROOFS TRADE MARK arranged around the representation of a turtle—raincoats. H. D. Groves, trading as Groves & Lindley, 15 Station street, Huddersfield, Yorkshire.
 380,884. Representation of the flower and leaves of an iris over the word IRIS—goods manufactured from india rubber and gutta percha, not included in other classes, but not including soles, heels and tips, and not including any goods of a like kind to any of these excluded goods. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.

- 380,894. Representation of the flower and leaves of a rose over the words THE ROSE—elastic webs and cords made of india rubber or with india rubber predominating. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,895. Representation of the flower and leaves of a violet over the word VIOLET—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., 2 Southampton street and St. George's Mills, Leicester.
 380,932. Representation of the flower and leaves of a buttercup over the word BUTTERCUP—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,933. Representation of the flower and leaves of a crocus over the word CROCUS—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,934. Representation of a spray of holly over the word HOLLY—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,935. Representation of the flower and leaves of an orchid over the words ORCHID BRAND—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,936. Representation of the flower and leaves of a pansy over the word PANSY—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,937. Representation of the flower and leaves of a snowdrop over the words THE SNOWDROP—goods manufactured from india rubber and gutta percha not included in other classes. Faire Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester.
 380,978. The word SOLOX—waterproofing compositions for textile fabrics used in the manufacture of clothing. Airplane wings, wind screens, ground sheets, covers and for similar purposes. J. Black, 53 Sandymount Drive, Wallasey, Cheshire.
 381,185. Representation of an elephant with characters of the Urdu (Hindustani) language above phonetically equivalent to HATY CHAP, rendered as ELEPHANT BRAND—paper or rubber insulated electric cables. Callender's Cable & Construction Co., Limited, Hamilton House, Victoria Embankment, London, E. C. 4.
 381,412. Representation of a hand grasping a dagger—india rubber tires. Thomas F. Guthrie & Co., 196 Bishopsgate, London, E. C. 2.
 381,673. The word COFILA—a plastic substance, not included in other classes, to be used as a filler and inserted between the soles of boots, shoes and slippers. Livingston & Doughty, Limited, Civita Works, Millstone Lane, Leicester.
 381,754. The word ARRABER in quotation marks—india rubber floor covering. W. Minter, trading as W. Minter, 18 Berners street, London, W., 1.

THE DOMINION OF CANADA.

- 23,111. The words LUCKY TREAD—bicycle tires. Canada Cycle & Motor Co., Limited, Toronto, Ontario, Canada.
 23,136. The words GOLD BOND—rubber tires, pneumatic, solid and cushion; rubber tubes, accessories of rubber or part rubber for these goods and rubber repair parts therefor, rubber valves, rubber water bottles, rubber mats and washers. The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 23,137. The words RED TOP—rubber tires, pneumatic, solid and cushion; rubber tubes, accessories of rubber or part rubber for these goods and rubber repair parts therefor, rubber valves, rubber water bottles, rubber mats and washers. The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 23,138. The letter F—rubber tires, pneumatic, solid and cushion; rubber tubes, accessories of rubber or part rubber for these goods and rubber repair parts therefor, rubber valves, rubber water bottles, rubber mats and washers. The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 23,139. Representation of a small boy yawning, dressed in a sleeping suit and holding in one hand a candle and in the other a vehicle tire—rubber tires, pneumatic, solid and cushion; rubber tubes, accessories of rubber or part rubber for these goods and rubber repair parts therefor, rubber valves, rubber water bottles, rubber mats and washers. The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 23,151. The word STANWAL—brake lining and clutch rings, friction and insulating tapes, splicing compounds, cable and specification tapes, rubber heels and fiber soles, anti-squeak and rubber matting and molded rubber goods. Standard Woven Fabric Co., Walpole, Massachusetts.
 23,154. Narrow white stripes on the sides of a tire—rubber tires. Canadian Consolidated Rubber Co., Limited, Montreal, Canada.
 23,162. The word MILLER—rubber tires. The Miller Rubber Co., Akron, Ohio.

NEW ZEALAND.

- 13,920. The word NÉOLIN with the words BETTER THAN LEATHER underneath. The Goodyear Tyre and Rubber Co. of New Zealand, Limited, Mercer street, Wellington, Dominion of New Zealand.
 14,211. Representation of a cat in black with the words THE HEEL WITH NINE LIVES appearing one over the other on its tail—rubber heels. Foster Rubber Co., Boston, Massachusetts, U. S. A.

DESIGNS.

THE UNITED STATES.

- 51,866. Pneumatic tire. Term 14 years. Patented March 12, 1918. R. M. Pierson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

51,867. Pneumatic tire. Term 14 years. Patented March 12, 1918. R. M. Pierson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

51,995. Vehicle tire. Term 14 years. Patented March 19, 1918. G. S. Towne, San Francisco, California.



51,866

51,867

51,895

51,917

51,939

51,917. Automobile tire. Term 14 years. Patented April 2, 1918. W. Bruce, Sandusky, Ohio.

51,939. Tire tread. Term 14 years. Patented April 2, 1918. W. E. Shively, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for April 1, 1918.

COUNTY OF NEW YORK, ss.:

Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who having been duly sworn according to law, deposes and says that she is the Business Manager of THE INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth street, New York City.

Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

Managing Editor, None.

Business Manager, E. M. Hoag, 25 West Forty-fifth street, New York City.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.) Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. HOAG Business Manager.

Sworn to and subscribed before me this 29th day of March, 1918.

[SEAL]

FRED. SPRENGER,

Notary Public, Westchester County.

Certificate filed in New York County.

New York County Clerk No. 188. Register's No. 8226.

(My commission expires March 30, 1918.)

MEETING OF SOCIETE DE CHIMIE INDUSTRIELLE.

The program of the Société de Chimie Industrielle at its meeting at 50 East 41st street, New York, April 24, included the following speakers: Professor George A. Hulett, Princeton University, member of Special War Commission sent to France and England, who spoke on "Some of the Chemical War Problems"; M. F. J. Le Maistre, member of the Visiting Committee of American Industries to France, who spoke on "The Condition of French Chemical Industries"; and Monsieur Marcel Knecht, member of the French High Commission, who spoke on "The Great Effort of the French Industries," illustrating a great munitions works, a war port, and the armies of the Marne, Verdun, and the Somme, as shown in moving pictures lent by the Ministry of War of France. An informal dinner was served before the meeting, in the dining hall of the Chemists' Club, through the courtesy of the latter organization.

CRUDE AND RECLAIMED RUBBER AND SULPHURIC ACID STATISTICS FOR YEAR ENDED DECEMBER

31, 1917.

CRUDE AND RECLAIMED RUBBER CONSUMED BY MANUFACTURING DIVISIONS.

	POUNDS.	
	Crude.	Reclaimed.
Tires and Tubes:		
Automobile pneumatic casings.....	160,527,867	31,920,927
Automobile pneumatic tubes.....	32,315,758	211,696
Motor and bicycle tires and tire sundries.....	6,305,449	6,199,427
Solid tires.....	26,176,513	6,789,200
Casings and tubes combined.....	19,673,218	1,848,438
Casings, tires and tubes combined.....	2,022,428	83,481
Totals.....	247,021,233	47,053,169
Mechanical rubber goods.....	47,765,284	75,338,450
Boots and shoes.....	28,377,019	35,342,989
Insulated wire and insulating compounds.....	5,953,205	18,974,503
Druggists' and stationers' sundries and surgical rubber goods.....	8,359,937	394,004
Waterproof clothing, including carriage cloth and rubber sheeting.....	3,562,833	11,694,326
Waterproof cloth, including single and double texture.....	1,310,694	999,289
Hard rubber goods.....	2,610,544	4,845,968
Rubber cement.....	3,275,676	18,663
Miscellaneous, not included in any of the above schedules.....	4,031,341	4,533,447
Boots, shoes, and insulated wire combined.....	407,282	542,980
Grand totals.....	352,675,048	199,737,788

RECLAIMED RUBBER PRODUCED.

	Pounds.
Reported by 448 rubber manufacturers.....	110,891,296
Reported by 18 manufacturers of reclaimed rubber.....	111,244,128
Imported.....	592,671
Totals.....	222,728,095

SULPHURIC ACID CONSUMED.

	Pounds.
Reported by 448 sulphur manufacturers.....	21,362,673
Reported by 18 manufacturers of reclaimed rubber.....	23,357,451
Totals.....	44,720,124

(Compiled by The Rubber Association of America, Inc.)

CRUDE RUBBER STOCKS OF DECEMBER 31, 1917.

MANUFACTURERS' STOCKS.

	In Stock at Factory.	In Transit Within United States Invoiced by Seller.	In Transit, Imported by Manufacturers Direct.	Total.
Crude rubber.....tons	25,602.7	8,656.	8,547.1	42,805.8
Gutta jelutong.....	2,722.6	90.5	.....	2,813.1
Gutta percha.....	147.7	2.3	.....	150.
Latex.....	113.4	9.1	.....	122.5
Gutta siak.....	748.1	1.5	.....	749.6
Totals.....	29,334.5	8,759.4	8,547.1	46,641.0

IMPORTERS' STOCKS.

	In Stores.	On the Docks and in Transit Overland in the United States.	Afloat for American Ports.	Total.
Crude rubber.....tons	6,702.1	6,521.1	11,506.7	24,729.9
Gutta jelutong.....	141.5	403.	1,219.	1,763.5
Gutta percha.....	23.7	5.	232.	260.7
Latex.....	407.	12.5	63.7	483.2
Gutta siak.....	50.6	275.	190.	515.6
Totals.....	7,324.9	7,216.6	13,211.4	27,752.9

TOTAL MANUFACTURERS' AND IMPORTERS' STOCKS.

	In Stores and in Stock.	In Transit and Afloat.	Total.
Crude rubber.....tons	32,304.8	35,230.9	67,535.7
Gutta jelutong.....	2,864.1	1,712.5	4,576.6
Gutta percha.....	171.4	239.3	410.7
Latex.....	520.4	85.3	605.7
Gutta siak.....	798.7	466.5	1,265.2
Totals.....	36,659.4	37,734.5	74,393.9

Compiled by The Rubber Association of America, Inc., from reports received from 490 out of 529 manufacturers and 153 out of 163 importers.

The Goodyear Tire & Rubber Co., on April 24, sent one of its dirigible balloons on a Trip from Akron to Cleveland and return, dropping bombs of Third Liberty Loan literature. Rapid-fire guns and the shrieking of steam whistles sounded an alarm before the dirigible started, simulating the signals used during air raids in England and France. The trip took about three hours.

Review of the Crude Rubber Market.

Copyright, 1918.

NEW YORK.

QUIET conditions prevailed in the crude rubber market during the first three weeks of April and very little business was transacted. The absence of manufacturers' demand and the limited trading between dealers during this period created easier conditions and minor price concessions were made, although the general market undertone was steady and firm.

On April 18, a private conference was held in Washington between a special rubber trade committee and the War Trade Board to consider the crude rubber situation in regard to the curtailment of all imports made necessary by the need of shipping in the Atlantic. The result of these deliberations had not been made public; however, a heavy buying movement followed, in which manufacturers and shorts participated, and prices advanced rapidly in an excited market. In a few days the buying interest subsided in the absence of definite information from Washington and easier conditions prevailed, although prices remained fairly firm until the end of the month.

PLANTATIONS.—This market was quiet with spot Latex and Ribs around 59 and 60 cents on April 1. On April 19, spot Latex and Ribs rose to 65 cents and soared to 71 cents for both grades before the reaction took place. On April 27 the market had subsided and spot Latex and Ribs were 68 and 69 cents respectively.

PARAS.—Brazilian grades were inactive and largely nominal. The scarcity of stocks and uncertainty of shipments, however, continued to steady the market. Upriver fine had been quoted around 61 cents for some time but with the advance quickly rose to 69 cents and firmly remained around 68 to 68½ cents until the end of the month.

The other grades of crude rubber participated in the general advance and made substantial gains.

WAR TRADE BOARD LIMITS RUBBER IMPORTS.

Late in the month just past, it was announced by the War Trade Board that imports of crude rubber by way of the Pacific ports would be limited to 25,000 tons during the months of May, June and July.

LONDON.

The London market has been quiet for the greater part of the last month, with the exception of considerable activity that followed the report of production curtailments and the rise in New York prices later in the month. Prices advanced but receded, however, when the movement subsided through lack of buying interest.

STATISTICS. The London and Liverpool imports for February were 13,247,000 pounds, value £1,545,779, compared with 16,944,000 pounds, value £2,035,284 for January. Exports were 3,317,100 pounds, value £431,926 for February, compared with 3,004,100 pounds, value £395,361 for January.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations one year ago, one month ago, and April 29, the current date.

PLANTATION HEVEA—	May 1, 1917.	April 1, 1918.	April 29, 1918.
First latex crepe.....	83 @	60 @	67 @70
*Hevea first crepe.....	79 @79½	56 @	63 @
Amber crepe No. 1.....	79 @	55 @	62 @
Amber crepe No. 2.....	@	54 @	61 @
Amber crepe No. 3.....	@	53 @54	60 @
Brown crepe, thick clean.....	77 @77½	52 @	60 @
Brown crepe, thin clean.....	77 @	52 @	60 @
Brown crepe, thin specky.....	@	49 @	57 @
Brown crepe, rolled.....	65 @	42 @	50 @
Smoked sheet, ribbed standard quality.....	83 @	60 @61	67 @70
*Hevea ribbed smoked sheets..			

PLANTATION HEVEA—

	May 1, 1917.	April 1, 1918.	April 29, 1918.
Smoked sheet, plain standard quality.....	82 @	58 @	66 @
*Hevea plain or smooth smoked sheets.....			
Unsmoked sheet, standard quality.....	79½ @	56 @57	66 @
*Hevea unsmoked sheets.....	64 @	46 @47	60 @
Colombo scrap, No. 1.....	62 @	45 @46	58 @
Colombo scrap, No. 2.....			

BRAZILIAN PARAS—

Upriver fine.....	74 @	60 @	69 @
Upriver medium.....	70 @	54 @	63 @
Upriver coarse.....	51 @	34 @35	39½ @
Upriver weak fine.....	@	46 @	52½ @38
Upper caucho ball.....	51 @51½	34 @	37½ @38
Islands fine.....	71 @	48 @	57 @58
Islands medium.....	34 @	40 @	39 @
Islands coarse.....	37 @	23 @	27 @28
Lower caucho ball.....	49 @	32 @	35 @
Peruvian fine.....	72 @	55 @	55 @
Tapajos fine.....	71 @	55 @	57 @

AFRICANS—

Accra flake, prime.....	31 @32	27 @	27 @
Niger flake, prime.....	31 @32	27 @	27 @
Benguela, extra No. 1, 28%.....	41½ @	@	29 @
Benguela, No. 2, 32½%.....	39 @	@	26 @
Congo prime, black upper.....	63 @64	48 @	48 @
Congo prime, red upper.....	59 @60	46 @	46 @
Rio Nunez ball.....	66 @67	@	@
Rio Nunez sheets and strings.....	66 @	@	@
Conakry niggers.....	66 @	@	@
Massai sheets and strings.....	65 @	@	46 @47

CENTRALS—

Castilloa block.....	@	44 @45	45 @48
Corinto scrap.....	@	35 @36	41 @
Emeralda sausage.....	50 @51	35 @	40 @
Central scrap.....	50 @	35 @	38 @39
Central scrap and strip.....	49 @	33 @	36½ @
Central wet sheet.....	36 @	30 @	25 @
Guayule wet, 20% guarantee.....	50 @	28 @30	33 @

MANICOBAS—

Ceara negro heads.....	36 @	@	42 @
Ceara scrap.....	49 @	39 @40	35 @
Manicoba special.....	38 @	41 @42	38 @39
Manicoba extra.....	35 @	37½ @	30 @34
Manicoba regular.....	32 @	32 @	36 @
Mangabeira thin sheet.....	38 @	36 @	30 @
Mangabeira thick sheet.....	33 @	30 @	31 @

EAST INDIAN—

Assam crepe.....	75 @	48 @	56 @57
Assam onions.....	73 @	48 @	44 @
Penang block scrap.....	35 @	38 @	37 @
Borneo, No. 2.....	@	@	@
Borneo, No. 3.....	@	@	@

BALATA—

Block, Ciudad Bolivar.....	@	72 @	70 @71
Colombia.....	65 @	58 @59	58 @59
Panama.....	@	55 @56	55 @
Surinam sheet.....	95 @	88 @92	88½ @92
Surinam amber.....	@	97 @	97 @
fair average quality.....	@	88 @92	88½ @90

PONTIANAK—

Pressed block.....	25 @	21 @22	23 @
Banjermassin.....	20 @	14 @	14½ @15
Gutta Siak.....	@	21 @22	24 @

GUTTA PERCHA—

Red Madagascar.....	2.10 @2.25	2.25 @3.00	3.50 @
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*Rubber Association of America nomenclature.

**Nominal.

RECLAIMED RUBBER.

The sharp advance in crude rubber recorded last month failed to affect the market for reclaimed rubber to any appreciable degree. Should the imports of rubber be curtailed, the manufacturers of rubber goods would naturally consume larger quantities of reclaim. This, however, is for future consideration as the mills are provided with ample supplies of the crude material.

NEW YORK QUOTATIONS.

APRIL 27, 1918.

Subject to change without notice.

Corona No. 30 black.....	lb.	.18 @
white.....	lb.	.20 @
No. 312 hydro-carbon.....	ton	50.00 @
325 hydro-carbon.....	ton	65.00 @
Standard shoe reclaim.....	lb.	.15 @
tire reclaim.....	lb.	.18½ @.20½

MARKET CABLE SERVICE FROM LONDON.

The following market report has been cabled by Aldens' Successors, Limited, London:

	Standard Crépe.	Ribbed Smoked Sheets.	Market.
March 25	29¼d.	28¼d.	Inactive.
April 2	29¼d.	28¼d.	Unchanged.
April 8	28¼d.	28 d.	Quiet.
April 15	28¼d.	28 d.	Firmer.
April 22	29¼d.	28¼d.	Buyers.

HIGHEST PRICES REALIZED AT SINGAPORE AUCTIONS.

	1915.	1916.	1st Half 1917.	2nd Half 1917.
Smoked sheet, fine ribbed... per picul	\$204	\$203	\$175	\$133
good ribbed	188	194	167	127
fine plain	185	193	148	117
good plain	183	189	139	111
Unsmoked, fine ribbed	182	190	143	118
good ribbed	178	167	129	114
fine plain	180	190	137	120
good plain	170	186	130	113
Crépe, fine pale thin	209	210	174	133
good pale thin	198	205	170	130
good pale blanket	195	197	170	129
good brown blanket	183	192	151	118
fine brown	190	198	154	119
good brown	179	189	141	113
good dark	171	179	130	109
bark	157	171	124	94
Scrap, virgin and pressed	120	124	115	90
loose	127	114	101	91

TOTAL QUANTITIES SOLD (tons).

	1914.	1915.	1916.	1st Half 1917.	2nd Half 1917.
	2,666	7,332	16,659	11,983	12,333

A picul equals 133½ pounds. Quoted in S. S. dollars = 2/4 (56.7 cents).
To arrive at the price per pound in United States currency, multiply above values by 0.425.

PLANTATION RUBBER EXPORTS FROM JAVA.

To—	December.		Twelve Months Ended December.	
	1916.	1917.	1916.	1917.
HOLLAND:				
Hevea	103,040	.....	342,720	.....
GREAT BRITAIN:				
Ficus .....	.....	.....	39,301	12,137
Hevea	636,160	.....	7,244,160	4,827,200
Ceara	1,976	.....	60,425	31,832
Castilloa	4,149	.....	60,089	38,005
Totals	642,285	.....	7,403,975	4,909,174
UNITED STATES:				
Ficus .....	.....	.....	33,031	12,085
Hevea	2,775,360	3,671,360	18,074,560	33,470,080
Ceara .....	.....	.....	14,542	6,349
Castilloa .....	.....	.....	17,536	11,651
Totals	2,775,360	3,671,360	18,139,669	33,500,165
SINGAPORE:				
Ficus	662	.....	42,365	21,146
Hevea	347,200	327,040	4,482,240	3,812,480
Ceara	18,089	735	73,986	33,119
Castilloa	1,320	.....	7,139	3,956
Totals	367,271	327,775	4,605,730	3,870,701
OTHER COUNTRIES:				
Ficus	15,349	543	32,380	543
Hevea	26,880	64,960	683,200	183,680
Castilloa	6,743	.....	6,743	.....
Totals	48,972	65,503	722,323	184,223
Grand Totals	3,936,928	4,064,638	31,214,417	42,464,263

ARRIVALS AT THE PORT OF NEW YORK.

PLANTATIONS, TO NEW YORK.

	Pounds.
APRIL 12.—By the City of Calcutta=Colombo:	112,000
APRIL 19.—By the Vestland=Colombo:	110,880
J. T. Johnstone & Co.....	2,300

NO DATES GIVEN.	
By the Calypso=Far East:	
Fred. Stern & Co.....	112,000
By the Monmouthshire=Far East:	
Hagemeyer Trading Co.....	6,720

OVERLAND, FROM FAR EAST.	
MARCH 16.—Ex Sachsen:	
J. T. Johnstone & Co.....	4,928

	Pounds.
MARCH 23.—Ex Thor:	
J. T. Johnstone & Co.....	73,920
APRIL 2.—Ex Roggeveen:	
Rubber Trading Co.....	24,640
APRIL 2.—Ex Tenyo Maru:	
Rubber Trading Co.....	13,440
APRIL 2.—Ex Transvaal:	
Rubber Trading Co.....	22,400
APRIL 4.—Ex Jacob:	
Rubber Trading Co.....	11,200
APRIL 5.—Ex Towa Maru:	
Rubber Trading Co.....	44,800
APRIL 6.—Ex Telamon:	
Rubber Trading Co.....	11,200
APRIL 6.—Ex Burma Maru:	
Rubber Trading Co.....	15,680
APRIL 10.—Ex Thordis:	
Rubber Trading Co.....	49,280

	Pounds.
APRIL 14.—Ex Koon Maru:	
J. T. Johnstone & Co.....	73,920
APRIL 15.—Ex Vondel:	
J. T. Johnstone & Co.....	61,600
APRIL 15.—Ex Biniang:	
Rubber Trading Co.....	44,800
APRIL 15.—Ex Rindjani:	
J. T. Johnstone & Co.....	12,320
APRIL 18.—Ex Willis:	
Rubber Trading Co.....	44,800
APRIL 19.—Ex Kotu Maru:	
Rubber Trading Co.....	33,600
APRIL 20.—Ex Storviken:	
Rubber Trading Co.....	6,720
APRIL 20.—Ex Empress of Asia:	
Rubber Trading Co.....	8,960
J. T. Johnstone & Co.....	54,208

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows:

During April the demand for commercial paper has fallen off considerably from March on account of the Liberty Loan and other demands for money. The best rubber names are quoted at 6½ to 6¾ per cent, and those not so well known 7 to 7½ per cent.

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	1918. ¹	1917.	1916.
Plantation:			
First latex crépe.....	\$0.59@0.70	\$0.80½@0.83	\$0.78½@0.85½
Smoked sheet ribbed.....	.59@.70	.80½@.83½	.77½@.84½
Paras:			
Upriver, fine .....	.60@.70	.75½@.77	.70@.74
Upriver, coarse .....	.34@.39	.51½@.52½	.54@.57
Islands, fine .....	.48@.53	.74@.75	.63½@.69
Islands, coarse .....	.23@.28	.34@.35½	.34@.37
Cameta .....	.23@.28	.37@.38	.38@.39

¹ Figured only to April 25.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [February 28, 1918]: The quantity cataloged for the weekly rubber auction which commenced yesterday was 1,228 tons. Following the reduced shipping facilities to Europe recently announced, prices show an appreciable drop. The highest paid for Fine pale crépe was \$89 per picul, which is \$5 below last week's best. Ribbed smoked sheet reached only \$83, a decline of \$8. Upon lower grades the fall was even greater, amounting as it did to \$10/15 per picul. The quantity sold was 590 tons.

The following was the course of values:

	In Singapore per Picul. ¹	Sterling Equivalent per Pound in London.	Equivalent per Pound in Cents.
Sheet, fine ribbed smoked.....	\$78@83	1/ 8¼@1/ 9¼	33.15@35.27
Sheet, good ribbed smoked.....	67@77	1/ 6¼@1/ 8¼	28.48@32.73
Sheet, plain smoked.....	60@..	1/ 5½@..	25.50@..
Sheet, ribbed unsmoked.....	..@..	..@..	..@..
Sheet, plain unsmoked.....	48@..	1/ 2¼@..	20.40@..
Crépe, fine pale.....	83@89	1/10¼@1/11¼	36.13@37.83
Crépe, good pale.....	66@84	1/ 6¼@1/10¼	28.05@35.70
Crépe, fine brown.....	56@66	1/ 4¼@1/ 6¼	23.80@28.05
Crépe, good brown.....	49@55	1/ 2¼@1/ 4	20.83@23.38
Crépe, dark	38@49	1/ 0¼@1/ 2¼	16.15@20.83
Crépe, bark	25@38	- 9¼@1/ 0¼	10.62@16.15
Scrap, virgin and pressed.....	33@35	-11¼@-11¼	14.03@14.88
Scrap, loose	32@..	-11¼@..	13.60@..

¹ Picul = 133½ pounds.

Quoted in S. S. dollars = 2/4 [56.7 cents].

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to government orders prohibiting access to the records.

[The Figures Indicate Weight in Pounds.]

	PARAS.	Fine.	Medium.	Coarse.	Caucho.	Cameta.	Totals.
MARCH 29.—By the Tela=Manaos.							
General Rubber Co.....	224,000	20,160	26,880	224,000	.....	.....	=495,040
Comm. Bk. of Span. Am., Limited .....	.....	.....	.....	22,450	.....	.....	= 22,450
Pell & Dumont.....	2,500	.....	44,000	112,000	.....	.....	=158,500
Hagemeyer & Brunn.....	22,400	.....	33,600	22,400	.....	.....	= 78,400
H. A. Astlett & Co.....	82,880	33,600	266,560	286,720	.....	.....	=669,760
Aldens' Successors, Ltd..	2,500	150	1,300	31,000	.....	.....	= 34,950
Meyer & Brown.....	.....	.....	.....	253,000	.....	.....	=253,000
APRIL 7.—By the Avaré=Para.							
Pell & Dumont.....	.....	.....	22,000	.....	.....	.....	= 22,000
General Rubber Co.....	13,440	.....	26,880	.....	.....	.....	= 40,320
Hagemeyer & Brunn.....	.....	.....	56,000	.....	22,400	.....	= 78,400
H. A. Astlett & Co.....	127,680	20,160	.....	.....	.....	.....	=147,840
Aldens' Successors, Ltd..	.....	.....	400	.....	.....	.....	= 400
Meyer & Brown.....	118,700	.....	22,400	41,600	.....	.....	=182,700

¹ Includes medium.

CENTRALS.

	POUNDS.
MARCH 1.—By the <i>Will Colding</i> =Colombia:	
Commercial Bank of Spanish America, Limited	7,460
MARCH 21.—By the <i>Limon</i> =Bahia de Caraquez:	
Commercial Bank of Spanish America, Limited	2,100
MARCH 22.—By the <i>Advance</i> =Bahia de Caraquez:	
Commercial Bank of Spanish America, Limited	41,300
MARCH 27.—By the <i>Gen. Goethals</i> =Bahia de Caraquez:	
Commercial Bank of Spanish America, Limited	11,200

GUAYULE.

MARCH 30.—By rail=Eagle Pass, Texas:	
Continental Rubber Co. of New York	306,500
APRIL 1.—By rail=Eagle Pass, Texas:	
Continental Rubber Co. of New York	77,110
APRIL 2.—By rail=Eagle Pass, Texas:	
Continental Rubber Co. of New York	49,400
APRIL 5.—By the <i>El Alba</i> =Galveston, Texas:	
Continental Rubber Co. of New York	90,200
APRIL 8.—By the <i>El Mar</i> =Galveston, Texas:	
Continental Rubber Co. of New York	160,100

BALATA.

MARCH 18.—By the <i>Prins der Nederlanden</i> =Paramaribo:	
William Schall & Co.	1,011

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIPS' MANIFESTS.*

SEATTLE AND TACOMA.

PLANTATIONS.

[Figured 135 pounds net to the case.]

TO AKRON, OHIO.

	POUNDS.
MARCH 18.—By the <i>Tyndareus</i> =Hongkong:	
Rubber Association of America, Inc.	3,240
H. B. M. Consul General	496,125 499,365
MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Firestone Tire & Rubber Co.	512,190
Goodyear Tire & Rubber Co.	524,475 1,036,665
†APRIL 1.—By the <i>Borneo Maru</i> =Muran:	
Goldman, Sachs & Co.	9,180
APRIL 11.—By the <i>Tensho Maru</i> =Singapore:	
Swinehart Tire & Rubber Co.	17,955

TO BOSTON, MASS.

MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Boston Wire & Insulated Cable Co.	4,995

TO JEANNETTE, PA.

APRIL 11.—By the <i>Tensho Maru</i> =Singapore:	
Pennsylvania Rubber Co.	4,455

TO NEW YORK.

MARCH 18.—By the <i>Tyndareus</i> =Hongkong:	
Aldens' Successors, Limited	103,950
Charles T. Wilson Co., Inc.	11,610
Edward Maurer Co., Inc.	66,015
Rubber Association of America, Inc.	224,235
J. T. Johnstone	8,910
Robinson & Co.	11,070
Whittall & Co.	94,770
Mexican Crude Rubber Co.	17,550
L. Littlejohn & Co.	3,780
Fred. Stern & Co.	12,285
H. B. M. Consul General	70,065
Firestone Tire & Rubber Co.	45,495
Goodyear Tire & Rubber Co.	4,050 673,785
MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Aldens' Successors, Limited	22,140
Whittall & Co.	140,670
Mexican Crude Rubber Co.	14,580
Charles T. Wilson Co., Inc.	225,180
Fred. Stern & Co.	102,870

* Footnote.—The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may, therefore, occur.

† Arrived at Tacoma.

	POUNDS.
Robinson & Co.	81,810
Rubber Trading Co.	202,365
F. R. Henderson & Co.	556,335
Robert Badenhop & Co.	210,600
Poel & Kelly	228,420
J. T. Johnstone & Co.	246,375
Raw Products Co.	20,115
Meyer & Brown	137,025
General Rubber Co.	632,205
Edward Maurer Co., Inc.	104,625
Van Sien & Co.	33,345
Arthur Meyer & Co.	14,850
W. R. Grace & Co.	8,100
L. Littlejohn & Co.	115,695
William H. Stiles	54,945
H. A. Astlett & Co.	32,400
Frank B. Ross & Co.	43,875
Penninsular Trading Co.	100,845 3,329,370
†APRIL 1.—By the <i>Borneo Maru</i> =Muran:	
L. Littlejohn & Co.	45,765
J. W. Wilson & Co.	2,430
Robinson & Co.	54,000
Winter Son & Co.	181,305 283,500

APRIL 9.—By the <i>Fushimi Maru</i> =Yokohama:	
L. Littlejohn & Co.	3,375
East Asiatic Co.	9,315
Winter Son & Co.	25,245
Robinson & Co.	13,230
William H. Stiles	7,830
Rubber Association of America, Inc.	58,590
J. T. Johnstone & Co.	38,880 156,465
APRIL 11.—By the <i>Tensho Maru</i> =Singapore:	
Charles T. Wilson Co., Inc.	73,170
F. R. Henderson & Co.	45,225
Poel & Kelly	122,310
L. Littlejohn & Co.	20,925
Penninsular Trading Agency	105,705 367,335

APRIL 13.—By the <i>Kamo Maru</i> =Yokohama:	
Charles T. Wilson Co., Inc.	41,310
Robert Badenhop & Co.	103,680
Poel & Kelly	102,330
Penninsular Trading Co.	41,310
F. R. Henderson & Co.	75,600
Rubber Association of America, Inc.	31,320 395,550

TO SEATTLE, WASH.

MARCH 18.—By the <i>Tyndareus</i> =Hongkong:	
E. R. Henderson & Co.	9,450
H. B. M. Consul General	135,675
Fred. Stern & Co.	58,590
W. R. Grace & Co.	68,985
Balfour Guthrie & Co.	14,445
Goodyear Tire & Rubber Co.	210,870
Poel & Kelly	18,225
William H. Stiles	8,235 524,475
MARCH 23.—By the <i>Taiyu Maru</i> =Kobe:	
Raw Products Co.	3,375

MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Charles T. Wilson Co., Inc.	66,015
Balfour Guthrie & Co.	70,470
W. R. Grace & Co.	116,910
Michelin Tire Co.	15,255
Poel & Kelly	110,295
Fred. Stern & Co.	230,445
L. Littlejohn & Co.	369,765
J. T. Johnstone & Co.	196,965
Robinson & Co.	62,370
East Asiatic Co.	57,915
Meyer & Brown	10,530
Arnold & Zeiss	11,340
Raw Products Co.	5,940 1,324,215

APRIL 1.—By the <i>Borneo Maru</i> =Muran:	
Aldens' Successors, Limited	65,610
Arthur Meyer & Co.	2,430
Goodyear Tire & Rubber Co.	10,125
L. Littlejohn & Co.	29,025
W. R. Grace & Co.	42,930
Anglo-South American Bank	17,550 167,670

APRIL 9.—By the <i>Fushimi Maru</i> =Yokohama:	
Rubber Association of America, Inc.	15,525
W. R. Grace & Co.	8,100
Fred. Stern & Co.	43,470
Michelin Tire Co.	3,780 78,975
APRIL 15.—By the <i>Dairen Maru</i> =Kobe:	
Rubber Association of America, Inc.	66,285
Poel & Kelly	42,120
Mitsui & Co., Limited	8,505
L. Littlejohn & Co.	16,875 133,785

TO WATERTOWN, MASS.

MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Hood Rubber Co.	92,880
APRIL 11.—By the <i>Tensho Maru</i> =Singapore:	
Hood Rubber Co.	32,670

TO YOUNGSTOWN, OHIO.

	POUNDS.
MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Republic Rubber Co.	24,975
APRIL 11.—By the <i>Tensho Maru</i> =Singapore:	
Republic Rubber Co.	48,600

TO TORONTO, CANADA.

MARCH 18.—By the <i>Tyndareus</i> =Hongkong:	
Rubber Association of America, Inc.	3,240

PONTIANAK.

TO NEW YORK.

MARCH 25.—By the <i>Shinkoku Maru</i> =Singapore:	
Charles T. Wilson Co., Inc.	17,250
Berizzi Bros. (gutta jelutong)	50,000 67,250

SAN FRANCISCO.*

[Figured 135 pounds net to the case.]

	POUNDS.
MARCH 23.—By the <i>Persia Maru</i> =Hongkong:	
F. R. Henderson & Co.	94,500 544,185
L. Littlejohn & Co.	89,910
Charles T. Wilson Co., Inc.	10,125
Robinson & Co.	143,640
J. T. Johnstone & Co.	152,145
Smith & Schipper	53,865
MARCH 24.—By the <i>Tjisalak</i> =Batavia:	
Winter Sons & Co.	69,120
Equitable Trust Co.	13,365
Rubber Association of America, Inc.	443,475
Eugen Boissevain & Co.	129,735 655,695
MARCH 26.—By the <i>Shinyo Maru</i> =Kobe:	
Charles T. Wilson Co., Inc.	5,400
J. T. Johnstone & Co.	225,585
L. Littlejohn & Co.	290,655
Fred. Stern & Co.	256,095
East Asiatic Co.	96,660
Robinson & Co.	91,665
Arnold & Zeiss	125,415
Goodyear Tire & Rubber Co.	179,415
Meyer & Brown	3,375
W. R. Grace & Co.	119,610
Hood Rubber Co.	83,025
Republic Rubber Co.	27,675
The B. F. Goodrich Co.	647,055
Edward Maurer Co., Inc.	88,020
Aldens' Successors, Limited	8,910
William H. Stiles	40,365
Rubber Trading Co.	63,315
F. R. Henderson & Co.	446,580
Raw Products Co.	16,740
Winter Sons & Co.	25,245 2,840,805

MARCH 29.—By the <i>Peru</i> =La Libertad:	
D. Hect & Co.	1,400

MARCH 31.—By the <i>Ecuador</i> =Hongkong:	
Aldens' Successors, Limited	8,370
Arnold & Zeiss	29,700
J. T. Johnstone & Co.	119,610
Poel & Kelly	59,805
F. P. Dow & Co.	10,125
L. Littlejohn & Co.	75,195
East Asiatic Co.	3,240
Arthur Meyer & Co.	31,050
W. R. Grace & Co.	39,690
F. R. Henderson & Co.	250,425
Fred. Stern & Co.	4,050
Robinson & Co.	3,240
Goodyear Tire & Rubber Co.	12,690
Firestone Tire & Rubber Co.	71,685 718,875

APRIL 3.—By the <i>Hudson Maru</i> =Yokohama:	
F. R. Henderson & Co.	913,545
L. Littlejohn & Co.	141,750
Goodyear Tire & Rubber Co.	88,830
W. R. Grace & Co.	38,745
Arnold & Zeiss	108,000
Arthur Meyer & Co.	3,240
Robinson & Co.	8,235
Smith & Schipper	50,625
Poel & Kelly	81,000
General Rubber Co.	163,890
Aldens' Successors, Limited	7,560 1,605,420

APRIL 3.—By the <i>Ophir</i> =Socrahaia:	
J. T. Johnstone & Co.	123,390
Goodyear Tire & Rubber Co.	68,580
Rubber Association of America, Inc.	13,500
Arthur Meyer & Co.	4,050
Robinson & Co.	17,010
W. Hammesfahr	12,690
Eugen Boissevain & Co.	13,500
Winter Son & Co.	37,260
W. R. Grace & Co.	85,050
Von Nordheim & Co.	27,000
The B. F. Goodrich Co.	101,790
Firestone Tire & Rubber Co.	84,105 587,925

POUNDS.		
APRIL 9.—By the <i>Korea Maru</i> —Hongkong:		
Aldens' Successors, Limited....	9,315	
Goodyear Tire & Rubber Co....	58,725	
Toyo Kisen Kaisha	405	
W. R. Grace & Co.....	12,150	
Robinson & Co.....	7,965	
Rubber Trading Co.....	2,295	90,855
APRIL 22.—By the <i>Siberia Maru</i> —Hongkong:		
F. R. Henderson & Co.....	267,435	
The B. F. Goodrich Co.....	32,670	669,060
Poel & Kelly.....	67,365	
Goodyear Tire & Rubber Co.....	23,760	
Robinson & Co.....	157,140	
Swayne, Hoyt & Co.....	2,025	
L. Littlejohn & Co.....	53,350	
W. R. Grace & Co.....	28,215	
J. T. Johnstone	35,100	
Shortshipped ex <i>Van Waerwijck</i> :		
L. Littlejohn & Co.....	135	
Robinson & Co.....	540	675
APRIL 22.—By the <i>Costa Rica</i> —Calcutta:		
Poel & Kelly.....	29,700	
Charles T. Wilson Co., Inc.....	50,220	79,920
PONTIANAK.		
APRIL 3.—By the <i>Ophir</i> —Soerabaya:		
British Bank of South America, Limited,		
gutta jelutong	98,000	

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS REPORTED.

PLANTATIONS.		
MARCH 11.—By the <i>Koningin der Nederlanden</i> —Batavia:		
General Rubber Co.....	183,600	
MARCH 12.—By the <i>Horaisen Maru</i> —Colombo:		
Meyer & Brown.....	582,400	
MARCH 16.—By the <i>Santa Cruz</i> —Colombo:		
General Rubber Co.....	432,300	
MARCH 21.—By the <i>Oranje</i> —Batavia:		
Meyer & Brown.....	67,200	
MARCH 25.—By the <i>Shinkoku Maru</i> —Singapore:		
MARCH 27.—By the <i>Shinyo Maru</i> —Singapore:		
Meyer & Brown.....	4,500	
General Rubber Co.....	739,200	
Meyer & Brown.....	206,100	
Fred. Stern & Co.....	602,560	
H. A. Astlett & Co.....	33,600	
APRIL 4.—By the <i>Hudson Maru</i> —Singapore:		
General Rubber Co.....	224,000	
Hagemeyer Trading Co.....	89,600	
J. T. Johnstone & Co.....	98,560	
APRIL 21.—By the <i>Empress of Japan</i> —Singapore:		
Meyer & Brown.....	56,000	

NO DATES GIVEN

By the <i>Rindjani</i> :		
Hagemeyer Trading Co.....	56,000	
By the <i>Tosa Maru</i> :		
Hagemeyer Trading Co.....	6,720	
By the <i>Starviken</i> :		
Hagemeyer Trading Co.....	31,360	
By the <i>Arabien</i> :		
Hagemeyer Trading Co.....	56,000	
By the <i>Rembrandt</i> :		
Hagemeyer Trading Co.....	11,200	
By the <i>Horaisen Maru</i> :		
Fred. Stern & Co.....	694,400	
By the <i>Atsuta Maru</i> :		
Fred. Stern & Co.....	158,800	
By the <i>Tyndareus</i> :		
Fred. Stern & Co.....	201,600	
By the <i>Selandia</i> :		
Fred. Stern & Co.....	1,904,000	
By the <i>Shinyo Maru</i> :		
Fred. Stern & Co.....	1,249,920	
By the <i>Ecuador</i> :		
Fred. Stern & Co.....	44,800	
By the <i>Vondel</i> :		
Fred. Stern & Co.....	44,300	
By the <i>Goetger</i> :		
Fred. Stern & Co.....	22,400	

CUSTOM HOUSE STATISTICS.

PORT OF BOSTON, MASS.—FEBRUARY, 1918.		
IMPORTS:	POUNDS.	VALUE.
India rubber	78,480	\$43,225
Manufactures of india rubber		770
Totals		\$43,995
PORT OF CHICAGO, ILL.—MARCH, 1918.		
IMPORTS:	POUNDS.	VALUE.
Rubber scrap	11,646	\$955
Manufactures of india rubber		35
Total		\$990

PORT OF CLEVELAND, OHIO—MARCH, 1918.		
IMPORTS:	POUNDS.	VALUE.
India rubber	1,522,892	\$713,786
Rubber scrap	50	25
Totals	1,522,942	\$713,811
PORT OF THE DISTRICT OF MASSACHUSETTS—MARCH, 1918.		
EXPORTS:	POUNDS.	VALUE.
Rubber boots—pairs:		
To—		
England	6,220	\$28,410
Canada	310	1,116
Totals	6,530	\$29,526
Rubber shoes—pairs:		
To—		
Canada	2,677	\$1,877
Cuba	1,667	1,429
Totals	4,344	\$3,306
Druggists' sundries:		
To—		
Canada		\$81
Newfoundland		14
Cuba		699
Total		\$7,94
Other manufactures of india rubber:		
To—		
Canada		\$146
Newfoundland		606
Cuba		3,812
Total		\$4,564

PORT OF THE DISTRICT OF MICHIGAN, MICH.—FEBRUARY, 1918.		
IMPORTS:	POUNDS.	VALUE.
Manufactures of india rubber		\$4,483
EXPORTS:	POUNDS.	VALUE.
India* rubber boots....pairs	1	\$6
Automobile tires		1,489
Other rubber tires		101
Belting, hose, etc.		2,596
All other manufactures of india rubber		3,134
Total		\$7,326
PORT OF SAN FRANCISCO, CAL.—FEBRUARY, 1918.		
IMPORTS:	POUNDS.	VALUE.
India rubber	6,773,222	\$3,610,339
Gutta jelutong (Pontianak)	504,521	56,345
Rubber scrap	9,912	603
Manufactures of india rubber		2
Total		\$3,667,289
EXPORTS:	POUNDS.	VALUE.
India rubber shoes....shoes	12,789	\$14,501
Automobile tires		133,429
Other rubber tires		3,213
Belting, hose and packing....		47,351
Druggists' sundries		4,505
All other manufactures of india rubber		19,123
Total		\$222,122

PORTS OF SEATTLE AND TACOMA, WASH.—JANUARY, 1918.		
IMPORTS:	POUNDS.	VALUE.
India rubber	7,594,839	\$3,855,050
Gutta jelutong	507,995	24,340
Totals	8,102,834	\$3,879,290
EXPORTS:	POUNDS.	VALUE.
India rubber boots....pairs	111	\$317
India rubber shoes....pairs	2,712	3,083
Automobile tires		45,289
Other rubber tires		5,390
Belting hose and packing....		65,430
All other manufactures of india rubber		11,743
Totals		\$131,252
PORTS OF SEATTLE AND TACOMA, WASH.—FEBRUARY, 1918.		
IMPORTS:	POUNDS.	VALUE.
India rubber	7,992,425	\$4,089,151
Gutta jelutong (Pontianak)	325,528	27,993
Gutta siak	67,200	7,870
Totals	8,385,153	\$4,125,014
EXPORTS:	POUNDS.	VALUE.
India rubber boots....pairs	40	\$114
India rubber shoes....pairs	2,220	2,468
Automobile tires		39,928
Other rubber tires		5,347
Belting, hose and packing....		19,928
All other manufactures of india rubber		9,408
Total		\$77,193

STATISTICS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.		
UNMANUFACTURED—free:		
February, 1918.		
Crude rubber:	POUNDS.	VALUE.
From—		
France	125,467	\$56,091
Portugal	32,738	11,000
England	614,188	282,660
Costa Rica	2,926	1,074
Guatemala	7,649	1,652
Honduras	1,659	589
Nicaragua	24,867	7,456
Panama	31,169	11,651
Mexico	17,450	11,054
Argentina	372,424	100,538
Brazil	5,428,321	1,936,542
Colombia	91,711	39,783
Ecuador	38,664	11,759
British Guiana	1,070	770
Peru	526,089	164,824
Venezuela	8,881	3,130
French China	15,680	6,041
British India	332,074	150,628
Straits Settlements	2,243,688	1,082,584
British East Indies	668,566	330,920
Dutch East Indies	3,198,714	1,716,654
British Oceania	622	378
Totals	13,784,617	\$5,927,778
Gutta percha:		
From—		
Dutch East Indies	286,677	\$16,722
Straits Settlements	22,846	3,176
England	22,791	6,239
Totals	332,314	\$26,137
Gutta jelutong:		
From—		
Dutch East Indies	888,835	\$39,527
Straits Settlements	542,647	26,690
Totals	1,431,482	\$66,217
Balata:		
From—		
Colombia	22,900	\$9,678
Panama	85,164	37,244
Venezuela	20,087	11,709
Totals	128,151	\$58,631
Rubber scrap:		
From—		
Colombia	422	\$14
Cuba	54,320	3,036
Canada	31,559	2,683
England	483,893	35,928
France	78,171	4,981
Totals	648,365	\$46,642
Totals, unmanufactured.....	16,324,929	\$6,125,405
MANUFACTURED—dutiable:		
Gutta percha:		
From—		
Ireland		\$1,659
Switzerland		2,564
Total		\$4,223
India rubber:		
From—		
France		\$357
Japan		5,215
Canada		846
Scotland		3,675
England		13,036
Total		\$23,129
India rubber substitutes:		
From—		
Dutch East Indies		\$551
Straits Settlements		26,799
Totals		\$27,350
EXPORTS OF DOMESTIC MERCHANDISE.		
February, 1918.		
MANUFACTURED—	POUNDS.	VALUE.
Automobile tires:		
To—		
England		\$16,986
France		6,290
Spain		3,535
British India		12,767
Argentina		51,308

February, 1918.			February, 1918.			January, 1918.		
MANUFACTURED—	POUNDS.	VALUE.	MANUFACTURED—	POUNDS.	VALUE.	UNMANUFACTURED—free:	POUNDS.	VALUE.
Auto tires:			Cuba	12,805		Rubber thread, not covered.	2,873	4,226
To—			Argentina	51,808		Balata, crude	100	125
Cuba	12,203		Brazil	98		Totals	1,197,238	\$489,884
Brazil	98		British India	45,853		Chicle	710,719	\$302,169
Chile	57,740		Dutch East Indies	42,653		General		
Peru	9,989		Australia	20,167		Tariff		
Venezuela	1,612		New Zealand	27,904		Value		
Mexico	21,658		Philippine Islands	22,213		Boots and shoes	\$20,594	\$2,867
Uruguay	30,336		British South Africa	20,800		Belting	12,150	
Panama	10,191		Other countries	167,391		Waterproof clothing	11,967	9,106
British South Africa	20,800		Total	\$502,402		Hose, lined with rubber	7,490	
British West Indies	11,726		All other tires	\$24,419		Mats and matting	62	
Italy	1,157		Scrap and old rubber	64,198		Packing	8,275	
Japan	1,381		Reclaimed rubber	258,001		Tires of rubber for all vehicles	141,277	1,126
Other countries	14,237		Belting, hose and packing	209,343		Rubber cement and all manu-		
Total	\$284,034		Rubber boots	208,482		factures of india rubber		
All other tires	\$12,355		Rubber shoes	42,544		and gutta percha—N. O. P.	81,752	5,567
Belting	109,452		Druggists' sundries	61,534		Hard rubber, unfinished, in		
Rubber boots	125,886	386,231	Other rubber manufactures	263,490		tubes for fountain pens	61	
Rubber shoes	15,634	10,513	Total, unmanufactured	\$1,826,014		Webbing, over one inch wide	8,166	1,076
Druggists' sundries	42,811		Fountain pens	10,575	\$6,858	Totals	\$291,794	\$19,742
All other manufactures of			EXPORTS OF FOREIGN MERCHANDISE.			EXPORTS OF DOMESTIC AND FOREIGN RUBBER		
india rubber	154,974		UNMANUFACTURED—	February, 1918.		GOODS.		
Total	\$1,000,370		POUNDS.	VALUE.		January, 1918.		
EXPORTS OF FOREIGN MERCHANDISE.			Balata	57,740	\$39,118	Produce		
February, 1918.			Guayule gum	8,788	2,461	of		
UNMANUFACTURED—	POUNDS.	VALUE.	India rubber	411,197	201,156	Canada.		
India rubber	20,108	\$12,985	Totals, unmanufactured	477,725	\$242,735	VALUE.		
Balata	35,340	26,333	MANUFACTURED—			Reexports		
Balata (in bonded warehouse)	22,400	12,785	Gutta percha		\$6,400	of Foreign		
Totals	77,848	\$52,103	India rubber		954	Goods.		
			Substitutes, elasticum, etc.		10,281	VALUE.		
			Total, manufactured		\$17,635			
			EXPORTS OF RUBBER GOODS TO NON-CONTIGU-					
			OUS TERRITORIES OF THE UNITED STATES.					
			February, 1918.					
			MANUFACTURED—	POUNDS.	VALUE.			
			To—					
			Alaska:					
			Belting, hose and packing		\$6,372			
			Boots and shoes	3,455	6,654			
			Other rubber goods		4,669			
			Total		\$17,695			
			To—					
			Hawaii:					
			Belting, hose and packing		\$5,658			
			Automobile tires		35,924			
			Other tires		2,340			
			Other rubber goods		8,367			
			Total		\$52,289			
			To—					
			Philippine Islands:					
			Belting, hose and packing		\$13,396			
			Boots and shoes		17,602			
			Tires		28,230			
			Other rubber goods		6,020			
			Total		\$65,248			
			To—					
			Porto Rico:					
			Belting, hose and packing		\$1,869			
			Automobile tires		39,773			
			Other tires		2,670			
			Other rubber goods		8,068			
			Total		\$52,380			
			RUBBER STATISTICS FOR THE					
			DOMINION OF CANADA.					
			The import and export figures by countries					
			usually published in this table are withheld by the					
			Canadian Government.					
			IMPORTS OF CRUDE AND MANUFACTURED					
			RUBBER.					
			UNMANUFACTURED—free:	January, 1918.				
			POUNDS.	VALUE.				
			Rubber and gutta percha,					
			crude caoutchouc or india	759,118	\$419,895			
			rubber, recovered	269,219	48,827			
			Hard rubber, in sheets and					
			rods	3,385	2,820			
			Rubber substitute	82,149	7,473			
			Rubber, powdered, and rub-					
			ber or gutta percha waste	80,394	6,518			
			Total					
			MANUFACTURED—					
			POUNDS.	VALUE.				
			Automobile tires:					
			To—					
			France		\$6,290			
			United Kingdom		16,986			
			Canada		34,112			
			Mexico		33,322			
			Total					

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.		February, 1918.		UNMANUFACTURED—		February, 1918.		UNMANUFACTURED—		February, 1918.	
		Pounds.	£			Pounds.	£			Pounds.	£
Crude rubber:				At—				From—			
London		8,976,000	1,070,381	London		6,600	95	London		2,144,300	274,060
Liverpool		4,271,000	475,398	Liverpool		79,300	778	Liverpool		1,173,400	157,866
Totals		13,247,000	1,545,779	Totals		85,900	873	Totals		3,317,700	431,926

THE MARKET FOR COTTON AND OTHER FABRICS.

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NEW YORK.

CONTINUED demand from the trade and a strong spot market were the direct causes of the new high record made in the price of American cotton early last month. April 4, middling spot was quoted 36 cents, with May contracts selling up to 34.50 cents and October up to 32.47 cents. With the reaction that followed came a falling off in demand and the market continued to decline without any definite reason other than the prevailing bearish sentiment. Prices declined rapidly under continued liquidation and on April 25, middling spot was quoted 27.55 cents. July contracts, 26.17 cents, a decline of 763 points since April 4. These quotations mark the lowest New York market prices since last fall. Later in the month the market recovered somewhat, due to a better trade demand.

EGYPTIAN COTTON.—The following advice, dated March 15, has been received from the Alexandria Cotton Co., limited:

In view of the requisitioning of the new crop by the government at \$42 per cantar (franco warehouse) for fully good fair Sakellarides, the futures market has been dull, and prices have reacted until they have attained the level fixed by the government.

There are ample stocks in Alexandria and the interior, and we think prices for fully good fair Sakellarides will range around \$42 until August 1, at which date the market will be closed.

The market has not yet recovered from the shock of astonishment produced by the announcement of this measure, and during the last two days more time has been spent in futile discussion than in business.

Nothing definite has yet been established with regard to the method by which the crop will be moved from August 1 next, and until more ample information is available our best policy is to abstain from comment.

Nine thousand bales of Egyptian cotton arrived in Boston last month.

SEA ISLAND COTTON. The southern markets have been very quiet during the entire month with firm prices varying from 69 to 70 cents for extra fine Georgias and Floridas. Fine to fully fine Carolinas were firm at 70 to 71 cents on the Charleston market.

John Malloch & Co.'s report of April 25 follows:

Planting is under way and we are sorry to report that there is going to be a decided decrease in acreage, especially in Georgia. The present price of Uplands and the certainty of being able to sell at any time is rather inducive to farmers to put in short cotton in place of Sea Islands. With the decrease in Egyptian acreage there will probably be a shortage of staple cottons running over 1½ inches next season, and we would advise our friends to take advantage of the stock here to lay in their supplies.

MECHANICAL DUCK.—War conditions have had the effect of speeding up deliveries on duck and increased government demands for deliveries over balance of this year have made it necessary to curtail production on rubber trade orders in proportion to the war demand increases.

RAINCOAT FABRICS.—During the past month the Government awarded contracts for about 2,000,000 slickers to the various raincoat manufacturers in the country. These contracts will require about 10,000,000 yards of 64 by 60 5.35 cloths and 10,000,000 yards of 64 by 60 3.25 sheetings, and as the two cloths are backed to one another, there will be approximately 10,000,000 yards of rubberizing. The civilian raincoat business is at a standstill.

TIRE FABRICS. During the last month there have been a fair number of inquiries for tire fabric and a reasonable amount of business was placed. Although during the last two weeks there has been a considerable decrease in the price of common American cotton, the staple cottons, like Peelers and Sea Islands, have not decreased proportionately, as there is a well-defined opinion that good grades of cotton are becoming very scarce and the premium asked for them is constantly advancing, so that the advance in premium seems to absorb the drop in common cotton.

The Government continues to buy in large quantities and keeps the mills very well filled up with business so that no weakness on the part of the sellers has been manifest or seemed called for by the situation.

NEW YORK QUOTATIONS.

APRIL 27, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard	\$0.57	@
No. 4, 38½-inch.....		.50	@
for gas masks.....		.45	@

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion..	lb.	.77	@
2½ lbs. sq. yd., brass or copper insertion..	lb.	.80	@

HURLAPS:

32—7½-ounce	100 yards	None	
40—7½-ounce		\$18.75	@
40—8-ounce		19.00	@
40—10-ounce		23.75	@
40—10½-ounce		21.75	@
45—7½-ounce		21.25	@
45—8-ounce		21.50	@
45—9½-ounce		24.75	@
48—10-ounce		25.00	@

DRILLS:

38-inch 2.00-yard	yard	.42	@
40-inch 2.47-yard .....		.34	@
52-inch 1.90-yard .....		.37	@
52-inch 1.95-yard .....		.36	@
60-inch 1.52-yard .....		.46	@

DUCK:

CARRIAGE CLOTH:

38-inch 2.00-yard enameling duck.....	yard	.37½	@
38-inch 1.74-yard .....		.43½	@
72-inch 16.66-ounce .....		.81½	@
72-inch 17.21-ounce .....		.84	@

MECHANICAL:

Hose	pound	.70	@
Belting .....		.70	@

HOLLANDS, 40-INCH:

Acme	yard	.28½	@
Endurance	yard	.31	@
Penn	yard	.34	@

OSNABURGH:

40-inch 2.35-yard	yard	.35½	@
40-inch 2.48-yard .....		.33½	@
37½-inch 2.42-yard .....		.34½	@

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water repellent.....yard	.22	@	
60 x 48 not water repellent.....	.19½	@	
Cashmeres, cotton and wool, 36-inch.....	.60	@	
Twills 64 x 72.....	.22	@	.25
64 x 102.....	.25	@	.30
Twill, mercerized, 36-inch.....	.29	@	
Tweed.....	.35	@	.40
Tweed, printed.....	.20	@	.22
Plaids 60 x 48.....	.20½	@	
56 x 44.....	.19½	@	
Repp.....	.25	@	.32
Surface prints 60 x 48.....	.20½	@	
64 x 60.....	.22½	@	

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces.....yard	.90	@	2.50
36-inch, 2¼ to 5 ounces.....	.65	@	1.40

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....yard	.75	@	1.40
36-inch, 2 to 4 ounces.....	.45	@	.95

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....yard	.50	@	1.30
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DOMESTIC WOVEN PLAIN LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....yard	.19	@	.30
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SHEETINGS:

40-inch 2.35-yard.....yard	*.28½	@	
40-inch 2.50-yard.....	*.27½	@	
40-inch 2.70-yard.....	*.24½	@	
40-inch 2.85-yard.....	*.23	@	
40-inch 3.15-yard.....	*.19½	@	

JACKET:

Delaware.....yard	.28½	@	
Schuylkill.....	.33	@	

SILKS:

Canton, 38-inch.....yard	*.30	@	
Schappes, 36-inch.....	*.52½	@	

STOCKINETTES:

COTTON, 52-INCH:

D—14-ounce.....yard	*.85	@	.90
E—11½-ounce.....	*.60	@	.65
F—14-ounce.....	*.85	@	.90
G—8-ounce.....	*.75	@	.80
H—11-ounce.....	*.70	@	.85
I—9-ounce.....	*.60	@	.65
Knitaback.....pound	*1.60	@	1.65

WOOL, 52-INCH:

A—14-ounce.....yard	*1.75	@	
B—14-ounce.....	*2.25	@	
C—14-ounce.....	*2.50	@	

TIRE FABRICS:

17½-ounce Sea Island, combed.....square yard	1.75	@	
17½-ounce Egyptian, combed.....	1.35	@	
17½-ounce Egyptian, carded.....	1.32	@	
17½-ounce Peellers, combed.....	1.20	@	
17½-ounce Peellers, carded.....	1.00	@	

*Nominal.

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1917, TO FEBRUARY 21, 1918.

To—	1917-1918.	1916-1917.	1915-1916.
Liverpool.....bales	130,582	151,591	163,791
Manchester.....	83,799	106,190	104,719
Other United Kingdom ports.....	42,751	.....	.....
Total shipments to Great Britain.....	257,132	257,781	268,510
To—			
France.....10,309 }	11,793	25,195	34,772
Spain.....1,484 }			
Italy.....	22,651	37,128	31,803
Russia.....	.....	21,238	32,259
Greece.....500		65	50
Total shipments to Continent.....	34,944	83,626	98,884
To—			
United States.....	13,530	102,127	145,693
Japan.....	12,464	8,055	18,010
Total shipments to all parts.....	318,070	451,589	531,097
Total crop (interior gross weight) cantars*.....	5,126,199	4,726,518	

*Cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co., Liverpool.)

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1917, TO MARCH 28, 1918.

	Receipts.	
	1917-18.	1916-17.
Stock on hand, August 1, 1917—		
Savannah, 1,043; Charleston, 1.....bales	1,044	2,508
Received at Savannah (gross).....	23,550	45,286
Received at Charleston.....	6,885	3,455
Received at Jacksonville.....	21,819	38,572
Received at Brunswick.....	.....	.....
Totals.....	53,298	89,821
Less exports.....	137,144	86,178
Stock March 28, 1918—		
Savannah, 13,695; Charleston, 2,459.....	16,154	3,643
Crop in sight at all ports to date.....	52,084	86,963

EXPORTS

	To						
	Great Britain.	Continent.	North Mills.	South Mills.	Charles-ton.	Burned.	Total.
From—							
Savannah.bales	78	142	8,321	2,342	15	.....	10,898
Charleston.....	.....	.....	4,427	.....	.....	.....	4,427
Jacksonville.....	.....	.....	21,819	.....	.....	.....	21,819
Brunswick.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	78	142	34,567	2,342	15	.....	137,144
1916-17.....	1,563	120	78,613	5,766	.....	114	86,178
	†1,487	‡22	†44,046	†3,424	‡15	†114	†49,034

¹In addition to the exports shown above there has been a very considerable movement from interior points to Southern mills and to Northern mills via Norfolk, but at present it is not possible to form a reliable estimate of the size of this movement.

†Decrease. ‡Increase.

(Compiled by John Malloch & Co., Savannah, Georgia.)

TIRE
FABRICSJENCKES
SPINNING
COMPANYPAWTUCKET
RHODE ISLAND

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

THE underlying conditions controlling rubber scrap have not changed and the market for the past month has been generally dull and devoid of interest. The advance that took place in crude rubber during the third week of April was followed by firmer prices and conditions improved somewhat in the rubber scrap market. The reclaimers, however, were not at all interested and the buying movement was of a limited nature.

BOOTS AND SHOES. This material has moved very slowly and prices have shown a lower tendency as the month progressed. On April 27, the same prices were quoted as a month ago and the supply is quite heavy.

INNER TUBES. The demand has been confined to small lots and prices show little change due to the small interest shown in this material.

MECHANICALS. Certain grades have moved in fairly large quantities but on the whole, business has been very unsatisfactory. Prices are nominal.

TIRES. Stocks have accumulated during the month and are now in excess of the limited demand from the mills. Prices are unchanged since last month and are largely nominal.

STATISTICS. The London and Liverpool imports of waste and reclaimed rubber for February were 85,900 pounds, value £873, compared with 77,500 pounds, value £878, for January. Exports for February totaled 683,300 pounds, value £20,738, compared with 306,300 pounds, value £4,675 for January.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

APRIL 27, 1918

* Prices subject to change without notice.

BOOTS AND SHOES.

Arctic tops	lb.	\$0.01½ @	.01½
Boots and shoes	lb.	.08¼ @	.09
Trimmed arctics	lb.	.07¼ @	.07½
Untrimmed arctics	lb.	.06¼ @	.06½

HARD RUBBER.

Battery jars, black compound	lb.	.02½ @	
No. 1, bright fracture	lb.	.27 @	.28

INNER TUBES.

No. 1, old packing	lb.	.22 @	.23½
new packing	lb.	.25 @	.26
No. 2	lb.	.11½ @	.12
Red	lb.	.11½ @	.12

MECHANICALS.

Black scrap, mixed, No. 1	lb.	.05½ @	
No. 2	lb.	.04 @	
Car springs	lb.	.05 @	
Heels	lb.	.04 @	
Horse-shoe pads	lb.	.04½ @	
Hose, air-brake	lb.	.06 @	.06½
fire, cotton lined	lb.	.02¾ @	
garden	lb.	.02½ @	.02½
mixed rubber	lb.	.02½ @	.02½
Insulated wire stripping, free from fiber	lb.	.04 @	
Matting	lb.	.01½ @	
Packing	lb.	.01½ @	
Red scrap, No. 1	lb.	.09½ @	.10
No. 2	lb.	.07 @	.07½
White scrap, No. 1	lb.	.13½ @	
No. 2	lb.	.09 @	

TIRES.

Pneumatic—			
Auto peelings, No. 1	lb.	.10 @	
No. 2	lb.	.07½ @	.07½
Bicycle	lb.	.05½ @	
Standard white auto	lb.	.06½ @	
Standard mixed auto	lb.	.05½ @	.05½
Stripped, unguaranteed	lb.	.04½ @	
White, G. & G.	lb.	.06½ @	
M. & W. and U. S.	lb.	.06½ @	
Solid—			
Carriage	lb.	.06 @	
Irony	lb.	.02 @	
Truck	lb.	.06½ @	

*Nominal.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

Copyright, 1918.

NEW YORK.

THE April metal markets have been inactive and without special features. There has been no change in copper. Lead is quiet and lower than a month ago. Spelter and antimony have also declined.

Transportation difficulties and government restrictions have adversely affected the market for rubber makers' supplies by holding up shipments of raw materials and the manufactured products. While further bookings have been light, inquiries were numerous; however, the uncertainty of delivery has resulted in a material restriction of actual business transacted. Naturally these conditions have hardened the market and prices in certain commodities have advanced, while the general undertone is firm.

CARBON BISULPHIDE. This has advanced and spot stocks are held at a premium due to shipping conditions.

CAUSTIC SODA. A new product known as caustic soda flakes is now being offered to the smaller consumers.

DRY COLORS. War conditions have strongly influenced this market, the principal difficulty being transportation, and prices in some instances have been substantially advanced.

LIME FLOUR. There is a strong demand for lime of all gradings. Labor is scarce and the producers are unable to meet present requirements.

WAXES. The scarcity and advanced prices of Carnauba wax have affected the entire line of waxes. Ceresin is high, beeswax and montan are very scarce, and supplies of ozokerite are about exhausted.

NEW YORK QUOTATIONS.

APRIL 27, 1918.

Subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerene	lb.	*\$2.62 @	
Accelomal (100 pound drums)	lb.	.80 @	
Accelerator No. 1	lb.	.60 @	
Aldehyde ammonia (crystals)	bbbl.	1.15 @	1.25
Aniline oil	lb.	.28 @	
Annex	lb.	.60 @	
Duplex	lb.	1.00 @	
Excellerex	lb.	.85 @	
Hexamethylenexamine	lb.	.60 @	
Hexamethylene tetramine (powdered)	lb.	1.15 @	
Paraphenylenediamine	lb.	3.00 @	
Tensilite	lb.	*.70 @	
Thiocarbamilide	lb.	*.50 @	
Velocite	lb.	*.60 @	
Vitaninex	lb.	.60 @	

ACCELERATORS, INORGANIC.

Lead, dry red	lb.	.10 @	
sublimed blue	lb.	.08½ @	
sublimed white	lb.	.08½ @	
white, basic carbonate	lb.	.09 @	
white, basic sulphate	lb.	*.08½ @	
Lime, flour	lb.	.01½ @	.01½
Litharge, domestic	lb.	.09¾ @	.10
English	lb.	*.12 @	
sublimed	lb.	.09¾ @	
Magnesium, carbonate	lb.	*.09¾ @	.12½
calcined, heavy	lb.	.12 @	
light	lb.	.50 @	
Magnesium oxide	lb.	.07½ @	
Magnesite, calcined, powdered	ton	50.00 @	65.00

ACIDS.

Acetic, 28 per cent (bbis.)	lb.	.06 @	.09
Glacial, 99 per cent (carboys)	lb.		None
Cresylic, 97-99 per cent, straw color	gal.	1.10 @	
95 per cent, dark	gal.	1.00 @	
Muriatic, 20 degrees	lb.	.03 @	
Nitric, 40 degrees	lb.	.08½ @	.09
Sulphuric, 66 degrees	lb.	*.02½ @	.02½

ALKALIES.

Caustic soda, 76 per cent, ground.....lb.	.09 @
Soda ash, light, 58 per cent in bags.....lb.	.04½ @

COLORS.

Black:

Bone, powdered.....lb.	.05 @
granulated.....lb.	.09 @
Carbon gas (cases).....lb.	.24 @
Ivory black.....lb.	.16 @ .30
Lamp black.....lb.	.12 @ .25
Oil soluble aniline.....lb.	1.25 @
Rubber black.....lb.	*.06 @

Blue:

Cobalt.....lb.	.25 @ .35
Prussian.....lb.	.80 @ .90
Ultramarine.....lb.	.18 @ .50

Brown:

Iron oxide.....lb.	.02 @ .04
Ochre, domestic.....lb.	.03 @ .04
imported.....lb.	.05 @ .07
Sienna.....lb.	.04½ @ .12
Umber.....lb.	.05 @ .06

Green:

Chrome tile.....lb.	.12 @ .14
Oxide of chromium (casks).....lb.	*.85 @
India rubber.....lb.	*.75 @

Red:

Antimony, crimson, sulphuret of (casks).....lb.	.40 @
crimson, "Mephisto" (casks).....lb.	*.50 @
Antimony, golden, sulphuret of.....lb.	.28 @ .30
golden, "Mephisto" (casks).....lb.	*.26 @
golden, sulphuret, States brand, 16-17%.....lb.	*.28 @
red sulphuret, States brand.....lb.	.25 @
vermillion sulphuret.....lb.	.55 @
Arsenic, red sulphide.....lb.	.45 @
Indian, reduced grades.....lb.	.04 @ .08
pure bright.....lb.	.14 @
Iron oxide, reduced grades.....lb.	.04 @ .08
pure bright.....lb.	.16 @
Oil soluble aniline, red.....lb.	2.50 @ 3.00
orange.....lb.	2.50 @
Oxymony.....lb.	.17 @
Venerian.....lb.	.02½ @ .04
Vermilion, English, pale, medium, dark.....lb.	2.00 @ 2.10

White:

Lithopone, imported.....lb.	.07¼ @ .08
domestic.....lb.	.07¼ @ .07½
Ponolith.....lb.	.07½ @
Rubber makers' white.....lb.	*.07 @ .07½
Zinc oxide, Horsehead (less carload, f. o. b. factory):	
"XX red".....lb.	.10½ @
"Special".....lb.	.11 @
French process, red seal.....lb.	.13¼ @
green seal.....lb.	.13¼ @
white seal.....lb.	.14¼ @
Zinc sulphide, pure.....lb.	None

Yellow:

Cadmium, tri-sulphate.....lb.	*2.68 @
sulphide.....lb.	2.25 @
Chrome, light and medium.....lb.	.25 @ .30
India rubber.....lb.	*1.00 @
Ochre.....lb.	.04½ @ .05½
Oil soluble aniline.....lb.	2.50 @

COMPOUNDING INGREDIENTS.

Aluminum flake (carloads, bbls., f. o. b. factory).....ton	26.00 @
Aluminum oxide.....lb.	.18 @ .14
Ammonia carbonate, powdered.....lb.	.13 @
lumps.....lb.	None
Asbestine (bags).....ton	22.00 @ 30.00
Asbestos (bags).....ton	35.00 @
Barium, carbonate, precipitated.....ton	60.00 @
sulphide, precipitated.....lb.	.07½ @
Barytes, pure white.....ton	35.00 @
off color.....ton	25.00 @
uniform floated (f. o. b. factory).....ton	35.00 @
Basofor.....ton	110.00 @
Blanc fixe.....lb.	.04½ @ .05
Bone ash.....lb.	.06 @
Chalk, precipitated, extra light.....lb.	*.05 @ .05½
precipitated, heavy.....lb.	*.04 @ .04½
China clay, English kiln dried.....lb.	.04 @
Cotton linters, clean mill run.....lb.	.06 @
Cordex.....lb.	.45 @
Energene.....lb.	.30 @ .45
Glue, high grade.....lb.	.35 @ .35
medium.....lb.	.23 @ .27
low grade.....lb.	.10 @ .25
Graphite, flake (400 pound bbl.).....lb.	.10 @ .25
amorphous.....lb.	.04 @ .08
Ground glass FF. (bbls.).....ton	*.02¼ @
Infusorial earth, powdered.....ton	60.00 @
bolted.....ton	65.00 @
Mica, powdered.....lb.	.03½ @ .05
Plaster of Paris.....bbl.	2.00 @ 3.00
Pumice stone, powdered (bbl.).....lb.	.03 @ .04
Rotten stone, powdered.....lb.	.02½ @ .04½
Rubber flux.....lb.	.15 @
Rubhide.....lb.	*.38 @
Silex (silica).....ton	20.00 @ 36.00
Soapstone, powdered, domestic.....ton	20.00 @
imported.....ton	40.00 @

Starch, powdered corn (carload, bbls.).....cwt.	5.30 @
(carload, bags).....cwt.	5.00 @
Talc, American.....ton	15.00 @ 22.00
French.....ton	*28.00 @
Tonghenite.....lb.	.40 @
Tripoli Earth, powdered.....ton	60.00 @
bolted.....ton	65.00 @
Tyre-lith.....ton	100.00 @
Whiting, Alba.....cwt.	.90 @ 1.10
commercial.....cwt.	1.25 @ 1.30
gilders.....cwt.	1.30 @ 1.40
Paris, white, American.....cwt.	1.50 @ 1.60
English cliffstone.....cwt.	1.75 @ 2.75
Wood pulp XXX.....ton	40.00 @ 45.00

MINERAL RUBBER.

Gilsonite.....ton	*55.00 @
Genasco (carloads).....ton	55.00 @
M. R. ....ton	65.00 @ 70.00
M. R. X.....ton	100.00 @
Liquid rubber.....lb.	*.12½ @
Pioneer factory.....ton	55.00 @
Richmond Brand.....ton	75.00 @
No. 64 Brand.....ton	70.00 @
Refined Elaterite.....ton	175.00 @
Raven M. R. ....lb.	.40 @ .80

OILS.

Corn, refined Argo (carloads).....cwt.	20.72 @
Linseed, raw (carloads).....gal.	1.55 @
Palm.....lb.	.30 @ .34
Paraffin.....lb.	*.27 @
Pine, steam distilled.....gal.	.47 @
Pine tar.....gal.	.28 @
Rapeseed, blown.....lb.	.25 @
Rosin.....gal.	.36 @
Tar (cases).....gal.	.31 @ .33
Glycerine (C. P. drums).....lb.	.66 @
Petrolatum.....lb.	.06 @ .14
Petroleum grease.....lb.	*.05 @

SOLVENTS.

Acetone (drums).....lb.	.35 @ .36
Benzol, 90 per cent.....gal.	.20 @ .35
Beta-naphthol, resublimed.....lb.	1.45 @
ordinary grade.....lb.	.67 @
Halowax oil No. 1000 (f. o. b. Wyandotte).....lb.	*.25 @
No. 1001 (f. o. b. Wyandotte).....lb.	*.32 @
Naphtha, motor gasoline (steel bbls.).....gal.	.33 @
73 @ 76 degrees (steel bbls.).....gal.	.33 @
68 @ 70 degrees (steel bbls.).....gal.	.30 @
V. M. & P. (steel bbls.).....gal.	.23 @
Toluol, pure.....gal.	5.00 @ 5.50
Turpentine, spirits.....gal.	.43¼ @
wood.....gal.	.36 @
Venice.....lb.	.10 @

SUBSTITUTES.

Black.....lb.	.12 @ .18½
White.....lb.	.13½ @ .25
Brown.....lb.	.19 @ .24
Brown factice.....lb.	.09 @ .25
White factice.....lb.	.13 @ .25
Paragol soft and medium (carloads).....cwt.	17.71 @
hard.....cwt.	17.21 @

VULCANIZING INGREDIENTS.

Carbon, bisulphide (drums).....lb.	.07½ @ .08
tetrachloride (drum).....lb.	.15½ @ .16
Lead, black hyposulphite (Black Hypo).....lb.	None
Orange mineral, domestic.....lb.	.13 @
Sulphur chloride (drums).....lb.	.06¼ @
Sulphur, flour, velvet brand (carloads).....cwt.	3.95 @
pure soft.....cwt.	3.95 @

(See also Colors—Antimony)

RESINS AND PITCHES.

Castella gum.....lb.	.50 @
Pine tar, reftort.....bbl.	13.00 @
kiln.....gal.	.24 @
Pitch, Burgundy.....lb.	.04½ @
coal tar.....lb.	.01½ @
pine tar.....lb.	.02 @
ponti.....lb.	.12 @
Resin, Pontianak, refined.....lb.	None
granulated.....lb.	None
fused.....lb.	None
Rosin, K.....bbl.	7.15 @
Shellac, fine orange.....lb.	.75 @ .78
Tar, kiln.....bbl.	11.00 @ 11.50

WAXES.

Wax, beeswax, white.....lb.	.67 @ .68
ceresin, white.....lb.	.24 @ .25
carnauba.....lb.	.80 @ .93
ozokerite, black.....lb.	.58 @ .60
green.....lb.	.78 @ .80
montan.....lb.	None
substitute.....lb.	.28 @ .30
paraffin, crude 118/120 m. p. (cases).....lb.	.10 @ .10½
124/126 m. p. (cases).....lb.	.10½ @ .10¾
refined 128/130 m. p. (cases).....lb.	.13¼ @ .14
135/137 m. p. (cases).....lb.	.16 @ .16½

*Nominal.



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